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JULY-AUGUST, 1960

VOL. 14, NO. 4

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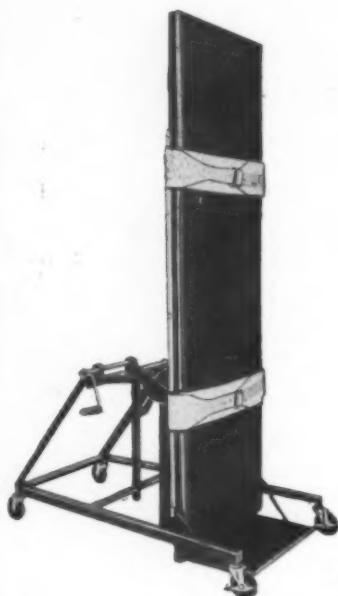
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THE JOURNAL OF THE ASSOCIATION FOR PHYSICAL AND MENTAL REHABILITATION

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REHABILITATION OF SPINAL CORD INJURED PATIENTS*

FRITZ FRIEDLAND, M. D.**

INTRODUCTION

Medical rehabilitation means the restoration of patients to their previous emotional, physical, intellectual, and socio-economical condition. Therefore, in its broad sense it includes the entire scope of medical care from the time a person's health becomes impaired until maximum results from all types of therapy have been obtained. In its more specific meaning, medical rehabilitation may be defined as the special discipline in medicine which concerns itself chiefly with the functional recovery of the patient's skills rather than the anatomical restoration of health. It thereby places its major emphasis on the end result of returning the patient to a status of independency, the restoration of human dignity, and the return to a mode of living which permits the patient again to make his own free choices. Because of the severity of the basic disability of spinal cord injured patients, consisting of motor and sensory paralyses as well as loss of normal visceral functions, and because of the often encountered severe complications, *e.g.*, urinary calculi and pressure ulcers, very close cooperation of the entire medical team is indicated.

GENERAL CARE

The end result of rehabilitation may be determined by the skillfulness of emergency and early care supplied at the location where the injury was suffered. Improper handling may turn a non-paralyzed patient with a vertebral fracture into a paraplegic or may change a partial cord injury into a complete one. Traumatic shock and the urgency of the moment must not be allowed to be a cause for improper handling of the injured; however, improvisations are indeed in order. A truck may serve well as an ambulance and a board or a door will substitute for a litter; rolling the patient onto the litter is preferable to lifting him. Flexing or rotating the spine and placing the patient in a regular automobile must be avoided under any circumstances. Longer hauls to reach a competent medical installation staffed and equipped for the care

of spinal cord injured patients is better than the admission to a local hospital which is not adapted to the care of such cases (1).

Urethral catheterization should have a high priority during the emergency care, and a suprapubic cystostomy is very rarely indicated. In addition to physical examination early x-ray examination and lumbar puncture are routine diagnostic procedures. Early laminectomies and inspection of the spinal cord through opening of the dura confirms the diagnosis, may establish the prognosis, and is in many instances a therapeutic necessity for decompressing the spinal cord. Cervical laminectomies, however, are rarely done because of their greater mortality rate and the relatively easy and quite efficient decompression through skeletal head traction (2).

Concomitant complications, *e.g.*, hemothorax or pneumothorax and fractures of the extremities must be dealt with accordingly, and high cervical lesions may require tracheotomies with or without artificial respiration. Plaster casts should be avoided because of the danger of pressure ulcerations which are prevented by the use of regular or sectional foam rubber mattresses on firm beds and by turning the patient at scheduled intervals throughout the twenty-four hour day. Prolonged bed rest is indicated especially in those cases where neurological recovery has been observed or is expected, yet patients with known anatomical transection of the spinal cord may be mobilized at a much earlier date.

Care of the urinary tract is probably the most important single item in the treatment of the spinal cord injured. Here again, prevention of infection and formation of calculi is preferable to their treatment. Large daily fluid intake must strictly be observed and tidal drainage or any other form of rhythmic filling and emptying of the bladder serves the purpose of preventing such complications, and also helps to maintain bladder tone and capacity, thereby initiating the important retraining of bladder function (3, 4, 5). Likewise, bowel training through controlled diet, enemas, habit training, and mild laxatives, if needed, produces adequate and regular elimination and at the same time provides a training program for the paralyzed bowels which protects the patient against the hygienic and social embarrassment of soiling himself.

PHYSICAL MEDICINE AND REHABILITATION

Against this background and in closest cooperation with nurses, therapists, and other physicians, the

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physiatrist is engaged in the restoration of neuromuscular function or its substitution and all such retraining and re-educational modalities designed to restore the patient's ability to return to an independent form of life.

Intimate knowledge and understanding of the entire pathological picture and due respect for potential or already existing complications are essential for intelligently applied rehabilitation techniques. In addition to previously discussed occurrences, certain complications in the musculoskeletal system can imperil the rehabilitation goal, namely, fractures of the extremities, limitation of joint ranges as the result of soft tissue injuries or contractures, myositis ossificans, and severe spasms.

Psychological Rehabilitation

The psychological preparation of the patient is an important step toward obtaining his cooperation for the physically and emotionally strenuous task of physical rehabilitation. Only the well informed and well motivated patient can be expected to persevere and reach the final goal of total rehabilitation. Unfortunately in most cases, even in those that were surgically explored, an early prognosis regarding recovery cannot be made. Therefore, at an early stage, while de-emphasizing the discouraging possibility of permanent paralysis, the encouraging feasibility of total rehabilitation must suffice to make the patient accept the need for long-term hospitalization and the outlook of living with a permanent disability.

Physical Rehabilitation

The first objective in the physical rehabilitative procedure is the maintenance of passive joint ranges in the paralyzed extremities and the maintenance and improvement of neuromuscular function of the uninvolved portions of the body. Care must be taken that manipulative treatment of the paralyzed and anesthetic extremities does not cause fractures of the osteoporotic bones.

Somewhat later during the patient's convalescence, training in the performance of activities of daily living at first in bed, then in wheel chair and in various other situations, is added to the re-educational program. Activities of daily living include dressing and undressing, feeding, shaving, toileting, bathing, and many other functions. The skilled paraplegic will find it not too difficult to master all of these activities while the quadriplegic requires special devices to substitute for lost function of hands and fingers. Such devices may be special eating utensils and other helpful gadgets which can be attached to the patient's hands through loops, clamps, or rings

(6). Hand braces are available which are motivated either by voluntary extension of the wrist (7) (a function which often is maintained in quadriplegics) or through a shoulder harness (8). At best, however, the quadriplegic will require some help for his daily living and will not achieve the independence expected of the paraplegic.

One of the most important activities of daily living is locomotion, the ability to get about. Actually mobilization of the paraplegic starts with his learning to change positions in bed, an important task which he must pursue throughout his life in order to avoid pressure ulcerations. The next step is wheel chair ambulation which must include unassisted transfer from bed to chair and from chair to bed. Here again the quadriplegic has to master additional difficulties, and his ability to propel the wheel chair is limited as to endurance, speed, and distance. An electric power-driven wheel chair will facilitate the quadriplegic's ambulation to an appreciable degree. Ambulation with braces and crutches is a desirable rehabilitation goal since it permits a patient to enter situations which are not accessible to wheel chairs. Moreover, weight bearing exercises are thought to counteract osteoporosis and the formation of calculi. However, being active seems to be of greater importance in this respect than the actual weight bearing itself. Most patients prefer the faster and less strenuous wheel chair ambulation but use crutch walking regularly as an exercise; even the quadriplegic can do so if parallel bars are available for helping him in balancing. Bracing of the lower extremities is done through caliper or stirrup braces with knee locks and an ankle stop or spring device; the type of brace is of much less importance than its proper fit. Ambulation training includes the swing to and swing through crutch gaits, backward and sideward gaits, and the mastering of inclines, curbs, steps, and stairs (9).

For long distance travel, the spinal cord injured patient usually prefers an automobile over public transportation because it permits travel from door to door and, with the help of special hand controls, the patient can easily learn to drive his automobile, another step towards complete independence.

Social Rehabilitation

The greater the independence that the patient has reached during his hospitalization, the easier will be his resettlement in his community and his return home. However, few patients will be physically capable or emotionally inclined to live by themselves. Some, if it is financially possible, may hire an attendant to live with them, but most patients will return to their own families. Quite often discharge from

the hospital and successful resettlement depends greatly on the patient's family which must provide him with a wholesome environment of comfort and safety which so far was supplied by the hospital. It is important that the patient, especially while still homebound, is adequately trained and interested in hobbies and avocational activities to avoid boredom and continuous requests for attention from the family. Training in arts and crafts and intellectual activities, therefore, must never be overlooked in a total rehabilitation program.

Moreover, a patient before being discharged must be supplied with clear instructions regarding sanitation and health measures: regulated fluid intake and adequate voiding must be maintained. The patient must be familiar with the proper care for day and night urinals, if such must be used (10). Decubiti through pressure from lying or sitting can be avoided and so can injuries to the skin which can occur during transfer from bed to wheel chair if done carelessly. Likewise, burns from radiators, hot water, and spilling of hot beverages is unfortunately seen too often.

Essential for independent home living is suitable housing equipped with certain features needed for wheel chair living. This requires one floor living with ramps instead of or in addition to steps unless an elevator is available. There should be no thresholds throughout the house. Doors and halls as well as the bathroom must be large enough to permit the passage of a wheel chair. Bathtub and toilet bowl require special handrails and, if a stall shower is desired, it must be constructed to allow the entrance of a specially designed shower chair. All hot water pipes must be concealed and scald-proof valves must be installed to prevent burns. Ideally there should be a separate bathroom for the patient since his special needs will force him to occupy it for unusually long periods, thereby inconveniencing the rest of the family. The garage should preferably be attached to the house with easy access by wheel chair; its width must permit wide opening of the automobile door for entering the car from a wheel chair.

Vocational Rehabilitation

Return to gainful employment is possible for most spinal cord injured (11, 12); it is desirable not only from the point of view, of financial incentive but it also satisfies the natural desire of a human being to be a contributing member of society again, thus leading to self-respect and the re-establishment of human dignity.

Its success depends on industry being willing to employ the physically disabled and also on the dis-

abled offering skills that would make him a desirable employee. For this purpose educational facilities should be available at the earliest possible time during the rehabilitation phase and the availability of occupational, manual arts, and educational therapy sections within the hospital facilitates early motivation and early retraining. Proper vocational counseling should not only try to match the patient's interests, aptitudes, and skills with his physical capacity, but also with the job openings in the locality where the patient expects to re-establish his home. Finally, it must be emphasized that guidance and training must be followed by placement since the average paraplegic needs help in finding employment.

The Quadriplegic

One might say that the higher the level of cord injury the greater the disability. Most certainly, the quadriplegic patient has a lesser rehabilitation potential than the paraplegic; he is more inconvenienced, more dependent on help, less mobile, and understandably less motivated. Yet, the difference is only one of degree, and many quadriplegic patients achieve a considerable level of physical independence and, if their need for help can be met, return to a satisfying home life and even return to gainful employment if a home-bound or otherwise sheltered form of industry is possible.

CONCLUSION

Rehabilitation of the spinal cord injured patient is an intricate procedure which places great demands on the skill and time of the medical personnel as well as on the patient's physical, emotional, and intellectual facilities. Certain factors can be recognized as causes for failure to reach the desired goal. Some of these are poor general health, advanced age, avoidable or unavoidable complications, absence of family ties, and a deterrent emotional and intellectual outlook. Yet, according to today's concept of medical rehabilitation, in spite of the unpredictable course of events, all patients must be offered the opportunity for rehabilitation.

In conclusion one may quote Donald Munro, the pioneer of the rehabilitation care of spinal cord injured patients who stated (11):

If he has been properly treated, every patient with a spinal cord or cauda equina injury, who is intelligent and cooperative, and who has the use of the shoulder, arm and hand muscles can be made ambulatory; can have such control of the bladder and bowels as to sleep through the night without either getting up or wetting himself; can carry out ordinary activities throughout the day without soiling himself with feces or having to evacuate his bladder oftener than every three hours; can lead a normal social life, and within the limits of his intellectual capacity, can earn a satisfactory living.

(Cont'd on P. 112)

PROJECTING CURRICULA DEVELOPMENT IN SCHOOL AND HOSPITAL SITUATIONS*

IS THERE REALLY A NEED?

Carl E. Klafs, Ph.D.*

As a nation we believe that every individual has equal rights and responsibilities. To assist each individual to realize his optimum potential we must provide an education so designed as to develop total fitness. Only in this way can we be assured of a competent, well-adjusted citizenry fully prepared to maintain its place of leadership for the rest of the world.

There are hundreds of thousands of pupils attending our nation's schools today who deviate from normal, to whom the term "exceptional" has been applied, who are the special consideration of the areas of special education and corrective therapy. According to Daniels, (1), 89 per cent of the estimated four million exceptional children of school age in this country are attending regular schools, the 11 per cent remaining are in attendance in special schools and classes. The growing tendency to remand more of the 11 percent into public school services in order to provide a normal environment creates more of a demand upon the teaching profession to provide capable fully-trained teaching personnel who can meet the special requirements of atypical education.

In the past, the exceptional student was excused from physical education. Today we seek to modify the program to the place where we can emphasize abilities rather than disabilities and establish an environment typical of a normal school situation. The California Conference on Physicians and Schools aptly pointed up this need when it stated:

Wherever possible, the experiences common to normal children should be utilized in the education of the handicapped child. Thus, the common characteristics would be capitalized, rather than the idiosyncrasies of the handicapped.

In recent years, particularly since the enactment in 1955 of Article 20.1, *Special Classes for Physically Handicapped Minors*, Subchapter 1 of Chapter 1, Title V of the California Administrative Code, there has been a definite trend in Southern California in particular, toward the development of more suitable

facilities, toward establishing more special physical education classes designed to meet the requirements of the law and toward developing an understanding of the problems encountered in dealing with correction and rehabilitation. In spite of this improvement, many programs — perhaps the majority — fall short of what may be considered desirable. Inept classroom procedures, uninspired routinized lessons, play programs, or simply a policy of *laissez faire* prevail.

In many instances, through no fault of their own, teachers must accept the responsibility for below-par programs. Investigation leads one to assume that the majority of poor programs are the result of a lack of proper training of the teacher, a lack of understanding on the part of the administrator as to what constitutes a proper program, or both.

To meet the needs of the atypical child in a more adequate manner, we must revise our teacher training programs. The usual two unit courses in kinesiology and in correctives do little more than give the student a basic understanding of deviations and corrections. They give little or no insight into the psychological and social problems, nor do they, as a general rule, progress beyond the postural-orthopedic and cardiac pathologies. Knowledge such as this is of assistance in conducting corrective physical education classes where the correction of remediable conditions and the improvement of body mechanics is the prime concern.

However, there is a large group of atypical or exceptional children whose disabilities are not remediable through corrective exercise alone. This group, composed of postural-orthopedic anomalies, post-polios, cerebral palsied, organic and functional heart disorders, epileptics, amputees, partial vision, and numerous other conditions are limited in activity and fall into categories which are not corrected through exercise alone. Yet, in the far-reaching scope of play and developmental activities, there are many things which can be done with success and safety. The proper understanding and conduct of such activities requires thorough and exact training evolving into clinical experiences as a climax.

*Presented at the meeting of the Therapy Section, 27th Annual State Conference, California Association for Health, Physical Education and Recreation, April 9, 1960, Bakersfield, Calif.

*Professor of Physical Education, Univ. of California, Los Angeles.

That there is a definite need for adequately trained and fully qualified personnel on the public school level is indeed quite evident. However, there is a second large area, namely that of physical medicine and rehabilitation. Private clinics, the Veteran's Administration Services, orthopedic hospitals, all are in constant needs of trained therapists. Salary scales, fringe benefits, and working conditions today compare favorably with those of the teaching profession in general.

Opportunities for placement are many and the need for properly trained therapists is becoming increasingly acute. Scholarships have been made available to encourage physical education majors to enter the field. Colleges and universities can meet the challenge and fulfill the need by providing suitable undergraduate and graduate training. Hospitals and clinics can contribute through the media of providing clinical and other ancillary services. It is our hope that this program will point the way.

CONTRIBUTIONS OF THE UNDERGRADUATE PHYSICAL EDUCATION INSTITUTIONS TO INTERTHERAPY RELATIONS

Frank J. Bok, Ph.D.*

The aims of the undergraduate institutions having physical education majors are, in general, similar; that is, to prepare the major in physical education for the teaching of physical activities, health education and coaching in the schools.

Our undergraduate institutions, by and large, prepare a finished product who is highly trained in the techniques of teaching physical activities, in the natural sciences, with strong orientation to the field of medicine, and in the field of adapted physical education.

Most of our finished products do not become therapists. They do not do so because of a lack of compassion for the handicapped. Therapeutics loses these people because of a lack of incentive to develop. The undergraduate institutions must bear some of the blame for the loss, for they have the initial contacts with these persons. The initial contacts are established in adapted physical education or related courses. We have contact with the athlete who has undergone rehabilitative measures and gains valuable insight and understanding as concerns rehabilitation. Many of these persons are highly motivated and have the compassion necessary for success. This is the source of supply for therapists that corrective therapy seeks. This is the point at which the undergraduate institu-

tions can contribute most to intertherapy relations. They can nurture this highly motivated major's feelings as concerns rehabilitation. This person could become an excellent therapist. This major deserves an opportunity to realize his potential in rehabilitation.

Our immediate contributions to intertherapy could be first to find these persons who are interested and second to provide guidance and opportunities for these persons to develop their potential by advanced experiences. These experiences could be laboratory or clinical situations where one can obtain experience in planning and in executing courses of therapy under the direction of a physician and certified therapists. Some institutions have, because of the availability of facilities adjacent to the campus or in the community, an unusually good opportunity to serve the major, the hospital, or community. Affiliations with Veterans Administration hospitals, as we know, are excellent for clinical experience. Communities having schools for the severely handicapped minors could also provide excellent facilities for affiliation. Affiliations with V.A. hospitals provide clinical experience which, if it is to be effective, is a combination of theory and practice. These affiliations are essential in initiating and maintaining positive intertherapy relationships. Several undergraduate institutions have initiated courses entitled Field Work in Corrective Therapy. You have doubtlessly read of the report in the *AAHPER Journal* last fall. Mr. Rudy Jahn will probably amplify this kind of affiliation for us. However, I think it would be appropriate to mention in broad terms the scope of these affiliations.

1. An orientation to Corrective Therapy programs in Veterans Administration hospitals and other community agencies.
2. Exercise techniques and muscular re-education procedures.
3. Ambulation, gait training, and use of canes, crutches and wheelchairs.
4. The use and care of braces and prosthetics.
5. Daily self-care activities.
6. Out-patient treatment and follow-through with maintenance factors and recovery aspects.
7. Interpretation of diagnosis, medical prescription and case histories for follow-up purposes.
8. Neuropsychiatric care.
9. Blind rehabilitation.
10. Problems related to tuberculous patient.
11. Control of the aging or contrasenesence.
12. First aid procedures for emergency.
13. Relaxation procedures in all phases of physical and mental adjustment and movement patterns.
14. Convalescent rehabilitation for injury cases.

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15. Lectures on specific areas or types of conditions.

16. Resocialization.

Field Work courses should be courses approved by the undergraduate institutions, and students should be given unit credit comparable to laboratory courses; for example, 3 units for 6 hours of clinical experience. Also, the hours spent here should apply to certification as a corrective therapist should the person elect to go into this area.

Our long range goals should be to move ahead toward initiating programs which are therapy-centered and lead to a degree in corrective therapy. This degree is in accordance with standards for accreditation set forth by the Association for Physical and Mental Rehabilitation. This program is a basic physical education program with therapy-centered prerequisites, related subject areas, general education, and education. This is a four year program and these graduates are eligible for graduate specialization. Dr. Young will give us some additional information since he has done most of the research and the writing of this curriculum.

Another long range goal could be to initiate a re-evaluation and upgrading of existing programs of adapted physical education in the public schools. We can do a better job of conducting these programs. Perhaps we will see our graduates in corrective therapy conduct these classes.

In closing we need to select interested, motivated persons for therapeutics and provide guidance and incentives for full growth. Laboratory or clinical experience are a step in the right direction. Corrective therapy degree programs should, where possible, be initiated. Finally, we need to re-evaluate our conduct of the adapted program in the schools.

THE TRAINING OF PHYSICAL EDUCATORS FOR REHABILITATION

Rudolph Jahn*

It is now established and acknowledged by most that corrective therapy has something unique to offer in the care of the handicapped and that the background in physical education is largely responsible for this contribution. It may also be argued that physical education has achieved some status in rehabilitation and has a professional responsibility in this field. Actually, the work done by physical education therapists is just an extension of the same type of service provided for nearly a century in some schools and colleges. The greatest change in the situation is that nearly the full range of physical education activities is now being utilized at some point in hospital, convalescent or rehabilitation care, but there is much to be

added to this. Granted, the training of physical educators has not been, and is not designed to prepare technicians for work in physical medicine and rehabilitation but rather to provide instructors for schools and colleges. Consequently, it is logical to conclude that graduates of physical education schools should receive technical training for this field whether it be in hospitals or rehabilitation centers or, it should be added, schools and colleges.

The adequately prepared physical educator needs additional study of anatomy, kinesiology, physiology, physiology of exercise and psychology in order to relate these materials to pathological conditions. He needs to understand the pathology of the various disabilities he will encounter and the effect and proper utilization of physical activity in surgical, orthopedic, neurological and psychiatric cases. There are times when a well placed checker may prove to be more beneficial in the treatment of a patient than the use of a twenty pound dumbbell. He must be thoroughly acquainted with the modalities of exercise, special skills, adapted sports, aquatics and recreational activities. He should have extensive supervised clinical experience with patients in hospital and rehabilitation centers with deficient and handicapped students and this is where we hope to assist.

We at the Veterans Administration Hospital, Long Beach are now collaborating with the administrative staff at Long Beach State College to set up a clinical training program for qualified physical educators with the understandings, abilities and skills listed above. Personnel competent in the application of their field to physical medicine and rehabilitation will participate in this training program. Such individuals will be specially trained to deal with the materials and methods of physical education process of teaching motor skills, to problems of ambulation and activities of daily living, be given knowledge of conditioning to the development of the strength of weakened muscles and the endurance of the weakened muscles of the deconditioned body as a whole; contribute his understanding of the value of recreation in life, introduce the method, motivation and application of education to increase the effectiveness of rehabilitation practices, indicate ways by which physical education activities may be adapted to the handicapped conditions and apply physical education tests and methods of research to rehabilitation.

We realize that instituting a curriculum, whether it be undergraduate or graduate, is not a simple matter. Many traditional standards must be coped with. Many and varied ideas of the school in general must

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be respected. Universities are operated by committees of decisions and each school and college has two or three sub-committees through which a request must pass. Time is no problem with college professors.

In our curriculum planning we should evaluate the factors behind the objectives of training corrective therapists. We all have theories in the variety of courses established in the colleges and universities already training corrective therapists. The most important consideration from the standpoint of professional status is this: the student must have a desire to be of service to his fellowmen; he must be endowed with a self-giving concern for the welfare of the handicapped person. He must possess the character and personality necessary for this adaptation.

Regardless of all the associated medical courses incorporated in a curriculum, a good strong physical education background must be preserved. The work of the corrective therapist is the only really true strong facet of good physical education left in our colleges. It is individual in its application. It is practical and not theoretical in its approach. The patient is a human being trying to readjust himself to society and not a number in the file of lost records. The good physical educator must be able to teach. The ability to teach is the common denominator in solving all the problems of the less fortunate that comprise our rehabilitation programs of the handicapped. The physical educator has been the successful corrective therapist because he has the understanding attributes necessary in handling his problems. He knows the philosophy, theory and practical application of exercises. Exercise is the physical educator's stock in trade. He understands exercise tolerance. He understands the minimum and maximum dosage the human body can endure. He knows the effect of exercise on the abnormal and the subnormal because he understands the effect it has on the normal. In knowing the tolerance of the normal individual he can better judge the progressive pace of the subnormal. He has an understanding of the principles and practice of teaching exercise. The trend of therapy is into the home for the chronic and long term convalescents, therefore, the therapist must be able to teach someone else how to administer therapeutic exercise — a parent or family education program. The physical educator understands the principles of motivation in prescribing exercise. He is a participant himself. He knows the price one must pay to attain good physical condition. He is physically strong enough to handle the job. His personal physical conditioning is necessary in providing security in safely handling the patient. He is enthusiastic in his work as he likes to perform and appreciates physical

progress. The physical educator's goal from the beginning is to help others and to teach his fellow man how to better care for his physical status. He is an extraverted personality. He is an optimist. He gets along well with people. He meets people well and understands the methods of appeal. He knows how to command respect of others as he knows the principles of leadership. He knows the psychological aspects of competition and is able to transfer this desire to the patient in his fight with his handicap.

A SINGLE GOAL AND A DUAL APPROACH IN PROJECTING CURRICULA DEVELOPMENT IN SCHOOL AND HOSPITAL SITUATIONS

Carl Haven Young, Ed. D.*

The incentive necessary to secure professional stature within a specialization or by an individual calls for many sacrifices on the part of those responsible for the destinies of an organization or an achievement by an individual. Any group or person with a dedication of purpose who is striving to attain respect and to gain the rights of recognition must be willing to assume responsibilities which at times are often most demanding.

In the zeal to accomplish desired goals one may spread himself so thin that others may see right through him. In some instances it becomes necessary to back himself between the buggy shafts of his spectacles and peddle his *tripewriter* in an effort to be heard. Some of these leaders are faced with the fitness problem themselves due to the pressure of many demands with a consequent condition of *lardosis*, recurrent trouble with their *sacred iliac*, *very close veins*, and many other idiopathic troubles until their shadows are better men than the real thing.

With the close interrelatedness of adapted and special physical education and corrective therapy it may be seen that these areas have a *single goal* in respect to the didactic and clinical preparation. However, a *dual approach* is required to meet the variances inherent in these specializations to adequately orient the prospective worker as to the existing differences of the respective situations.

A major in physical education is required from an accredited educational institution to qualify in conducting these ancillary services. The essential differences as to requisites are with reference to the clinical phase of training, although similar field work experiences would be most beneficial in either of these specialties from a practical standpoint.

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It is generally recognized that it is impossible to adequately meet accepted major requirements and still prepare qualified leaders in the respective fields on an undergraduate level alone. Many of the present teachers and therapists are called upon to assume responsibilities with only one or two special courses of direct concern to their particular area of emphasis. Is it any wonder that many members of the American Medical Association and physicians in general look aghast at the curricula which are being offered and assumed to assure competence?

Such a situation has resulted because of several major reasons: *first*, colleges and universities are forced to prepare candidates who are essentially *generalists* and capable of teaching in several different subject areas, yet these are often the persons who are called upon to serve as *specialists* in various areas; *second*, the professions have failed to realize the full significance of definitive education and the need for greater breadth of preparation of paramedical specialists; and *third*, specific competencies in accordance with job analyses have not been previously agreed upon and clearly defined so that success has largely been dependent upon experience obtained on the job.

The similarities in functions pertaining to the respective applications, modalities and their uses make possible the clarification of broad areas and delineation or scope of a curricula of preparation which should be offered on the graduate level. Agreement as to such professional standards should result in a greater degree of uniformity of programs; lead to a more extensive acceptance of those employed in such services; and through the establishing of sound accreditation procedures eventually result in merited professional status.

Every organization and segment of education is challenged to consider critically its basic philosophy and reason for existence. Since efficiency in action is the first criterion of success it becomes necessary to ascertain the ingredients involved in the attainment of competence and then to devise an instrument for determining the professional trajectory which is to be followed to reach the target.

Since physical education is the foundation or base from which these forces or specialties are prepared it becomes an essential segment of study to formulate specific major subject areas of emphasis which are generally accepted on a nationwide basis. Such an investigation required approximately three years and a consensus was obtained which offered a baseline of agreement upon which to further implement the curriculum in the direction of specialization for corrective therapists.

Recognizing the limitations for expansion of offering on the undergraduate level, due to the demands of major requirements, the Association for Physical and Mental Rehabilitation realized that to gain medical recognition and to accelerate professional competence and status, the curriculum would need to be extended to the graduate period. The membership and Medical Advisory Board constituents were canvassed as to their recommendations for the defining of professional standards, having first been supplied a tentative format as to the specific ideas and general context.

Resulting therefrom are the present elements which constitute the *framework of the corrective therapy profession*. These include: the professional standards, educational requirements, clinical experiences, accreditation procedures, and directional goals for clinical affiliations, as well as certification standards.

The need for a similar clarification of *preparation of highly capable adapted physical educators* has led to a study of basic areas believed to be pertinent to the subject field. At present there are few if any institutions offering graduate programs leading to higher degrees where those who seek further advancement in their specialty may center their interest and study.

Research pursued by the members of a graduate seminar in intertherapy education during the Fall of 1959 revealed the possibility and need for further development of such programs. Bulletins were reviewed from 162 representative colleges and universities, 62 of which did not list adapted physical education courses. It was found that of the 100 schools with programs there were 100 different course titles, some institutions with several different courses being listed. An attempt was made to obtain some degree of uniformity as to best course titles as well as agreement regarding the scope and sequence suggested.

It is quite apparent that through the formulating of these programs it becomes possible to offer *coordinated curricula* that may serve to provide more expert personnel in all these related fields, at the same time offering individual satisfaction in achievement.

Segments which appear to be the most meaningful and the proposed unit values for each area are:

I. HISTORICAL PHILOSOPHY

2 UNITS

- A. Development and Trends
- B. Administrators' Responsibilities
- C. Foundation Beliefs or Precepts

II. CLINICAL ASPECTS

3 UNITS

- A. Recognition of Conditions and Prognosis
- B. Selection and Assignment of Subjects
- C. Therapeutic Exercises and Use
- D. Referral and Follow-through

(Cont'd on P. 112)

PHYSICAL REACTIVATION AS A TREATMENT APPROACH FOR ELDERLY DETERIORATED NEUROPSYCHIATRIC PATIENTS

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By the time long-term neuropsychiatric patients have reached old age, opportunities for physical expression or functional use of their limbs may have become so limited, due to their inactivity and psychological maladjustment over a period of years, that they may have reached that condition which we term "deteriorated." Such patients simply "vegetate" on the wards, becoming increasingly preoccupied with their private worlds thus lessening their chances for recovery and a better hospital adjustment. This is pointed out by Jenkins (1) in a passage which also includes a statement of the rationale for the present study:

The schizophrenic's preoccupation with unresolved conflicts interferes with higher levels of functioning. The reversal of the schizophrenic process through the drawing of the higher brain structures into the service of day-to-day adjustment is illustrated in spontaneous recovery which originates in the development of interest, motivation, and adaptive behavior in occupational therapy, manual arts therapy, corrective therapy, or music therapy.

The treatment program herein described is an attempt to produce this "reversal of the schizophrenic process" by giving a group of geriatric patients in an NP hospital an opportunity to function in a physical, social and psychological level once again, at the same time giving them positive guidance in self-care and attempting to renew their interest in their surroundings.

In collaboration with the medical director of the hospital and the Counseling Psychology Service, 10 long-term neuropsychiatric patients were selected to participate in a group activities class organized to determine what effect physical reconditioning exercises and practice in functional movement patterns might have in bringing about a change in patients previously unable to respond to ward activities and programs. Individual treatment was to be stressed.

The general criteria for selection were:

1. Inability to initiate conversation.
2. Seclusiveness or asociality (this group included the solitary "sitters" and "standers").
3. Poor posture or poor ability to walk.

All of the patients selected had been psychotic for ten years or more, all had shown little or no im-

provement under the chemotherapy and EST, and all were to some degree resistive and negativistic.

More specifically, the group included:

- Three patients who spoke in a neologistical manner, needed passive assistance from the therapist to execute exercises, and were resistive towards leaving the ward.
- Two patients who had some degree of organicity—CO₂ poisoning and syphilis.
- One patient who behaved in an obsessive-compulsive manner—repeated one or two phrases constantly.
- Three patients who were surly, aggressive, resistive, asocial and seclusive.
- One patient who withdrew from the center of the class, laughed inappropriately, and had periodic altercations on the ward.

All of the patients participated in the program for at least five months, with some continuing for twelve months.

Procedures

In the corrective therapy clinic, the therapist began each daily class with formal reconditioning exercises on the mat. In order to begin the re-socialization process, each exercise was named, and the functional purpose and musculature involved was given. The exercises consisted of sit-ups, leg raises, back levers, finger flexing and extending, and tossing the medicine ball in a circle. A minimum of five repetitions and a maximum of ten repetitions was given for each exercise, depending on the group's progression level. A two minute rest period was given between each exercise to prevent fatigue and strain. The therapist stressed executing each repetition together, and passive movements were executed by the therapist if patients were negativistic or resistive. Counting each repetition individually was encouraged by the therapist to reactivate upper brain cells and decrease preoccupation.

The medicine ball phase included each patient catching, holding, or tossing the ball to the therapist, who was in the center of the circle. This was progressed to the point where each patient exchanged places with the therapist in the center of the circle and then tossed the ball around the circle to each patient in turn. Each time the ball was about to be

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thrown or caught by the patient, the therapist mentioned his name; *e.g.*, "Throw the ball to John Jones," or "Catch the ball, George!" This procedure was followed to enable patients to learn each other's name. In addition, emphasis was also placed on knowing the therapist's name, the hospital's name, the name of the activity or piece of equipment, and the name of the clinic he was in, so as to better orient the patients as to time, place and person.

As a means of resocializing members of the group, each patient stood in a line formation while holding on to a firm rope by means of which the therapist led them in a walk around the clinic — the total trips around the clinic being increased each day. As the patients increased in self confidence, each was asked to lead the group. In the therapeutic pool, towels were tied together to form a rope-like device.

Other equipment which was used throughout the exploratory period included darts, speed bag, exercycle, ring toss, softball, basketball, hand gripper, squeeze-ball, chest expander, wall pulley weights, shoulder wheel, bar bells, pronator-supinator apparatus, stall bars, volley ball, and ping pong equipment.

The patients were progressed from simple activities to more complex ones, and from individual activities to more group participation, depending upon their needs.

Once a week, rewards in the form of soft drinks were given and during the past month, fruit juices have been given on the ward after each class. Many of them look forward to this treat after the class period is over.

The aspect of the program involving activities of daily living included giving the patients practice in writing or attempting to write their names on a daily class attendance sheet. In some cases passive movements had to be carried out by the therapist.

This procedure gave the patients an opportunity to increase the use of their fingers, overcome writing disability due to prolonged disuse and, it was hoped, made them more aware of their responsibility for corresponding with relatives and friends. The therapist explained these reasons to the patients as a group, first, and then each patient was given a pen or pencil upon termination of the exercise phase of the class and requested to write his name. If the patient refused to hold the pen or pencil, the therapist then assisted the patient passively until the name was written. Everyone had to make an attempt either actively or passively.

On the days that soft drinks were not distributed, patients were drilled in taking a drink of water at the end of the session, and the value of the practice in aiding elimination, and preventing dehydration, con-

stipation, and impaction (which are serious nursing problems with the geriatric group) was repeatedly emphasized to the group.

Each patient was observed as to his personal hygiene and grooming and reminded often that he must be careful to avoid sloppiness, voiding, and unbuttoned shirt sleeves and trousers. Two patients were selected to open and lock all the doors from the ward to the clinic, one for three months, the other for six months. Better posture was emphasized while the patients walked—(no hands in pockets but rather swinging the arms in a reciprocal manner)—and walking endurance was achieved by starting the patients walking up one flight of stairs and then increasing the flights of stairs progressively.

Another technique that was utilized involved the verbally aggressive compulsive patient. He had a habit of shouting or repeating one or two phrases—*e.g.*, "Nine o'clock. Take us all back upstairs to bed tonight!"—throughout the entire class period. It was decided to channel this response by using Dunlap's "Negative Practice" technique. Accordingly, when the patient repeated a phrase, he was told to repeat the same phrase 10 times, then 20, etc., until 150 repetitions were reached, at which time he exclaimed, "The hell with it! I'm not going to say it!" The next day he continued with his phrase repeating, but he was not as loud and the therapist could decrease the repetitions by asking him questions about what he had learned in the class. Counting numbers up to 150 also decreased his compulsive repetitive phrase expressions.

Throughout the study, an attempt was made by the authors to be positive and definite towards the patients at all times and to make them feel that they were expected to cooperate regardless of their personal feelings or bizarre mental behavior. If necessary, passive exercises were used to initiate habit patterns until the patient assumed direction of his own activity.

For example, during the first month, many of the patients entered the clinic and walked to a chair and began sitting as they had done on the ward. Others preferred to stand near the door or in a corner of the clinic. However, each day the therapist made it known that group calisthenics would be given immediately on the mat. From the second month, all but three of the patients would walk directly to the mat, and these three cooperated with some urging.

Results

All patients appeared to improve to some extent in the following areas:

1. motor skills and physical fitness.
2. orientation, communication and socialization.

3. personal hygiene and grooming.

4. motivation for activity *per se*.

More specifically, eight patients were finally able to use the medicine ball correctly, another would hand the ball to the therapist or another patient, and the tenth would hold the ball for 10 seconds before dropping it.

Concerning physical fitness, the medical director regards it as significant that none of the patients in the experiment has been admitted to his service for serious illness thus far. He feels that the physical reconditioning exercise and regular functional activities may have been a factor in deterring physical ailments. Three patients who were being considered for transfer to another building, due to inability to walk up and down stairs, are now able to perform this activity and have not been transferred. Three other patients no longer use the rail for assistance as was true previously, and all ten patients are now able to walk up four flights of stairs.

As measured by a Manuometer Grip Test, all but two patients increased their grip strength in either one hand or both. Six patients increased their grip strength in both hands.

Three patients improved their posture. Of these, one walked faster and in a more erect manner, while the other two walked while swinging their hands and arms in a reciprocal manner, instead of keeping their hands in their pockets.

Initially, none of the ten patients seemed to know even one patient's name, the name of the hospital, activity or clinic. At the end of the exploratory period, however, one patient knew the names of all of the patients, the instructor, hospital, clinic, and equipment. Seven others either were able to say their own names or one or two other names. The remaining two patients continued to be mute or spoke neologistically. However, one of these two patients would respond to the therapist's instructions. Three patients were observed to socialize on their own initiative and six would socialize if stimulated by the therapist. The other one continued to prefer to be by himself and to be given direction most of the time.

At the end of the study, seven patients were able to write their names clearly. All the patients were able either to scribble in the appropriate place or to write their names legibly on the daily attendance class sheet. Initially, only five patients attempted to write their names clearly or by scribbling. Of these five patients, four wrote legibly; the other five patients refused to try to write, even when stimulated. Four patients have been observed to initiate a conversation and two others converse if stimulated by the therapist.

With respect to personal hygiene and grooming, three patients who were incontinent sporadically now appear to have achieved satisfactory control, and three patients have been rated as better groomed than previously. Eight patients drink water, fruit juice or soft drinks with little or no urging.

The improved motivation for activity *per se* is most evident in the fact that all of the patients now come to the clinic willingly, showing none of the resistance or negativism which was expressed initially. In fact, some of the patients regularly wait for the therapist at the door of the ward.

Conclusions

1. Physical reactivation seems to help the elderly deteriorated neuropsychiatric patient to regain his former status as a functional, self-sufficient individual.
2. Guided progression from individual activities to group participation appears to result in improved communication and ability to relate to other patients.
3. Marked improvement in physical fitness appears to be possible with NP Geriatric patients who have traditionally been allowed to deteriorate physically.
4. A general improvement in motivation and self-direction, which may open the door to other therapeutic approaches, may result from an activity program of the type described.

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DR. ENGLE PROMOTED

Appointment of Dr. H. Martin Engle, manager of the Veterans Administration hospital in Denver Colorado, as deputy chief medical director for the VA in Washington, D.C., has been announced by the agency. He succeeds Dr. Roy A. Wolford, who retired at the end of April after more than 40 years of Federal service. Dr. Wolford has been deputy chief medical director since December, 1952.

In his new post, Dr. Engle will occupy the number two position in VA's Department of Medicine and Surgery which operates a nationwide system of 170 hospitals and 91 out-patient clinics.

PHYSIOLOGIC RESPONSE TO PROLONGED EXERCISE*

GEORGE L. BECKNER, M. D., F. A. C. S. M.

TRAVIS WINSOR, M. D., F. A. C. S. M.

INTRODUCTION

The facts to be presented to you are the results of our work in the study of the response of the body to prolonged physical effort as found in the long-distance marathon runner and a comparison of these findings with like findings in the diseased state. The electrocardiographic findings of these runners will be compared with a control group of the same age, height and weight.

Acute and chronic physiologic changes which occur due to prolonged physical exercise have been recognized. These changes resemble those found in certain diseased states. Cardiac enlargement as seen in the marathon runner is not indicative of heart disease, and our study confirms the observation that certain electrocardiographic deviations do resemble those encountered in patients with cardiac disease.

The groundwork for this paper was begun in May, 1948 when the first Annual Western Hemisphere Marathon Race was run in the Memorial Coliseum in Los Angeles. During the past 12 years, more than 250 marathon runners, competing in 5, 10, and 26 mile races have been examined before and after the races. These findings were compared with 40 non-runners of corresponding age, height and weight. Over 200 electrocardiograms were taken.

GENERAL FINDINGS OF THE MARATHON RUNNERS AND NON-RUNNERS

Age

1. Average age, runners 27.9 years (18-48).
2. Average age, non-runners 25.5 years (18-42).
3. In the 26 mile races, the older group (31-48 years) had 54.6% finishing while only 39.4% of the younger group (15-31 years) finished.
4. In the 10 mile races, 96.6% of the runners finished.

Height

1. Average height for the runners was 68.0 inches (65-76).
2. Average height for non-runners was 65.5 inches (57-71).

Weight

1. Average weight for the runners 142 lbs. (119-168).
2. Average weight for non-runners 148 lbs. (112-175).

Weight Loss

1. Average runner in the 26 mile race lost 5.1% body weight, Actual loss 2.5 to 11 lbs.
2. Average runner in the 10 mile race lost 2.7% body weight.
3. Weight loss therefore was about 1% of body weight for every 5 miles run.

Blood Pressure

1. Average 126/75 before and 90/69 after the race.

Venous Blood Pressure (Anticubital)

1. Normal before and elevated an average of 210% after running.

Pulse

1. Average for runner before race 57 per min. at rest (40-72).
2. Average for non-runner 65 per min.
3. Average for runner after the race 91 per min. (76-108).

Effect on Blood Chemistry After running 26 Miles

1. Physical and chemical analysis of 10 runners were as follows: (All blood determinations were normal before the race)

Increased after the race

N.P.N.	73%
W.B.C.	70%
Sed. rate	50%
Hemoglobin	4%
R.B.C.	2%

Color Index remained the same

Decreased after the race

Calcium	0.6%
Sugar CHO	2.5%
Alkali CO ₂	4.0%
Potassium	30.0%
Chlorides	56.0%

Of special interest is the 73% increase in NPN and the 56% decrease in chlorides. Fifty per cent of the low chloride runners had severe muscle cramps.

*Publication 2, Southwest Area, Members, American College of Sports Medicine. A summary of a paper presented by Dr. Beckner before the group at the Univ. of California, March 10, 1960 and based upon Beckner, G. L. and T. Winsor, Cardiovascular Adaptations to Prolonged Physical Effort. *Circulation* 9:6, June, 1954.

The slight deviation of the serum potassium was not responsible for the increased height of the T waves in the ECG for the potassium levels continued to rise as much as 30 hours after the race, and the T waves in these cases decreased to the resting level within a short while.

COMPARISON OF THE HEART SIZE OF THE RUNNER AND NON-RUNNER

1. Determined by measurement from A-P X-Rays in both groups, and the Predicted Size was based on the tables of Ungerleider and Clarke, which are based on the height and weight of the subject.
2. All hearts appeared to be uniformly enlarged, there being neither right nor left sided enlargement.
3. In the *great vessels* the runners averaged 5.8% above the non-runners.
4. In *transverse diameter*, the runners averaged 6.6% above the non-runners and averaged 5.8% above predicted size. Twenty-six percent of the runners exceeded 10% above the predicted size of their hearts.
5. In *broad diameter*, runners averaged 4.5% above the non-runners.
6. In *long diameter*, runners averaged 7.9% above the non-runners.
7. *Heart size* was affected by running, and a *decreased size* was noted immediately after running.

ANALYSIS OF THE P, R AND T WAVES

P Waves

1. Normal before running.
2. Increased after running.
3. P Waves of runners were 20% above the non-runners.
4. P Waves were increased 66% after running.

R Waves in V₄

1. Increased after running.
2. Runners averaged 29.5% above non-runners.
3. Averaged a 7.1% increase after running. Ten percent of runners were above Mx of 31 mm at rest.

T Waves in V₂ and/or V₃

1. Increased after running.
2. Runners averaged 19.3% above non-runners.
3. Increased an average of 19.3% above non-runners.
4. Increased an average of 36.9% after running. Sixteen percent of runners were above Mx of 14 mm at rest.

ANALYSIS OF THE ELECTROCARDIOGRAMS

The various electrical axes and forces were measured and calculated.

1. No abnormality was found outside of a slight change in amplitude of force, or a slight change in direction of that force, which could be accounted for by decrease in cardiac size or change of position.
2. All forces were in normal relationship one with the other.
3. Vertical or semivertical hearts were found in 94.3% of the runners.
4. The P-R interval of the runner was 0.16 sec.; non-runner, 0.17 sec.
5. The QRS complexes in Lead II were compared in both groups. The average for the runner at rest was 0.086 sec. and 0.074 sec. for the non-runner. After running, the duration was less than at rest. Running increased the magnitude of the QRS complexes.
6. The configuration of the QRS complexes were in V₁, all within normal limits except nine, and did not exceed 0.1 sec. These nine had a P-R prime wave suggestive of right bundle block.
7. There was only one case which showed this P-R prime of the QRS in V₁ that resembled the right bundle block.

ECGs OF A TYPICAL MARATHON RUNNER AT REST SHOWS

1. Slow rate (bradycardia).
2. High voltage of QRS—especially V₅. R wave is 46mm (17 mm is normal standard). Our control for the non-runner was 31.0 mm. Ten percent of our runners had R waves above this figure of the controls.
3. Transition zone shifted to the left.

ELECTROCARDIOGRAM OF MARATHON RUNNER BEFORE AND AFTER 26 MILE RUN

1. All S-T segments in all tracings were normal except one.
2. One had 1.5 mm negative S-T segment shift in V₃ and V₄ after running 26 miles.
3. This runner complained of unusual fatigue during the race—the S-T segments returned to the base line within the hour.

COMPOSITE EXAMINATION: OF ECGs SHOWED:

1. Certain waves of the ECG of the runner were greater than the non-runner at rest.
2. That these waves were *increased* by running.
3. That from 10-18% of the runners had complexes or waves that exceed the usually accepted minimum values for that particular wave.
4. That 42% of the runners exceeded the Max. value of 10.5 mm for RV₁ plus SV₅ after race.
5. That 44% of the runners exceeded the Max. value of 35.0 mm. for SV₁ plus RV₅ after race.

Having thus established the fact that the well-trained marathon runner after prolonged physical effort showed at rest (a) increased cardiac silhouette on the x-ray; (b) a definite type of electrocardiogram, we wished to compare these findings with those seen in certain diseased states, namely *essential hypertension, aortic valvular disease and coarctation of the aorta*. We wished to challenge the concept "that the secondary T wave in hypertension was part of the left ventricular pattern."

This concept suggests that the increased pressure in the left ventricle results in high voltage of the QRS complexes, thus increasing the areas under these waves, and as the consequence, the occurrence of S-T segment and T waves which are discordant with the major deflection of the QRS complex. These waves have been considered to be secondary to the large waves of the QRS complexes and do not in themselves, indicate heart disease; this relationship is seen in the ventricular ectopic beat (1).

We wished also to divide hypertensive patients according to their electrocardiographic findings; that is those with *discordant* or *concordant* T waves, and to compare the percent of symptoms in each group, by comparison of those with *normal* and those with abnormal R/T ratio.

The electrocardiograms of patients with strain on the left ventricle were studied to determine if the high voltage of the QRS complexes is always associated with discordant S-T segments and T waves. A tracing of a patient with essential hypertension with typical left ventricular strain pattern shows:

1. High voltage of QRS.
2. The T waves and the S-T segments are discordant to the main deflection of the QRS complexes.
3. Radiographic evidence of cardiac enlargement.

A tracing of a patient with hypertensive heart disease showed:

1. High voltage of QRS complexes.
2. Absence of discordant T wave and S-T segments under the last QRS complexes and T waves are greater than average. However, one group had discordant T waves and in the other the T waves were upright.

The areas under the QRS complexes and T waves were studied to determine if there was any constant relationship between these waves. Twelve normal persons, 12 runners and 12 hypertensive patients (10 with coarctation of the aorta) were studied. The areas under the QRS and T waves were determined separately in lead V₅. The differences in the areas between the positive and negative waves of the QRS

complexes were calculated. The QRS/T and R/T ratios were determined.

Results

1. In the normal control group, the area under the R waves was nearly equal to the area under the T wave.
2. In the runners, the areas under these waves were approximately twice that of the normals.
3. In the hypertensive subjects the areas under the R waves were less than they were in the runners, and the T waves were distinctly lower—and most of them were negative values. It was not possible to calculate the QRS/T or R/T ratio in 8 of the 12 hypertensive patients as the T waves were discordant with the R waves. The R/T ratio in these cases indicated that the T waves when upright were low in comparison to the amplitude of the R waves. One hypertensive case had a normal R/T ratio, and the tracing resembled that of the runners.
4. One patient with rheumatic aortic stenosis and insufficiency had high voltage of the QRS complexes and a normal R/T ratio.
5. In the ten adult patients with coarctation of the aorta there was an increased voltage of the R waves in the left precordial leads.

The relationship between the electrocardiogram and symptoms and signs of heart disease was studied in 30 hypertensive patients, all of whom had high voltage of the QRS complexes. These patients were divided into two groups, those with normal R/T ratio and those with abnormal R and T relationships. The areas under the R waves in the two groups are similar and were taken in V₅.

Signs and Symptoms	Normal R/T Ratio. Concordant S/T Segments and T Waves	Abnormal R/T Ratio. Discordant S/T Segments and T Waves
Dyspnea	10%	60%
Angina pectoris	3%	72%
Cardiac enlargement	20%	60%
Congestive heart Failure	0%	40%
Average Blood Pressure	185/110	210/124

This was the average for 30 patients.

It is thus evident that dyspnea, angina pectoris, cardiac enlargement and cardiac failure occurred more frequently in patients with discordant T waves and an abnormal R/T ratio, and that the incidence of these signs and symptoms were greater in those with an abnormal R/T ratio.

DISCUSSION

The importance of recognizing that prolonged physical effort does produce certain cardiovascular changes can readily be seen from this study.

The electrocardiogram taken at rest, on the runners, show definite changes, which fall outside those generally accepted as normal, as well as outside the values seen in the non-runners, who served as controls.

The well trained marathon runner has a physiologically enlarged heart, and this increase in size can be demonstrated on the x-ray.

The runner at rest shows on the electrocardiogram a slow heart rate and high voltage of the QRS complexes and T waves in the standard and precordial leads. These findings are exceedingly common, and indicate ventricular hypertrophy, which is *not a sign* of a diseased heart, in these runners, but it has been produced by the intensive training of the runner.

The typical high voltage of the QRS complexes and tall T waves, which are increased after running, and remain concordant—maintaining a normal R/T ratio.

This increased voltage after running appears to be due as increased potential of the myocardium, but may be due to many other factors including the decreased size of the heart after running.

SUMMARY

This study shows that prolonged physical effort—long distance running, produces a characteristic electrocardiographic, radiologic and electrolytic change. The heart is enlarged uniformly without evidence of disease. The recognition of this picture and its relationship to previous training and exercise is important in the differential diagnosis of cardiac enlargement.

It is important that the athlete himself be informed of these findings, and that he know that the enlargement of his heart is due to his past physical performances, and that it is not due to strain or disease.

Cardiac enlargement in the marathon runner suggests that the increased pressure of the left ventricle, such as is seen in early hypertension, which produces an increased voltage of the QRS complexes without alteration of the T wave, produces an electrocardiogram and cardiac enlargement, which is similar to that which is produced by prolonged physical effort on the part of the marathon runner, and must be distinguished from this condition, so as to prevent an error in diagnosis, for this is but a physiological hypertrophy and *not* a diseased state.

After studying and reviewing the heart in con-

nection with these long distance runners, and those with certain diseased states, I feel as did David when he recorded in Psalm 139:14—"I am fearfully and wonderfully made;" and I am more willing to accept the wisdom of Solomon that he gives in Proverbs 4:23, "Keep thy heart with all diligence for out of it are the issues of life."

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QUESTIONS FOLLOWING TALK

The following questions were asked following the talk with answers provided by Dr. Beckner. (Transcription courtesy of Philip J. Rasch, Ph.D.)

What should be done with the runner at the end of a marathon race. What is the effect of exhaustion on his heart rate and blood pressure? How do we keep him from collapsing after a race?

It is very essential following long distance running that the runner continue to jog for a few minutes even though he is physically exhausted after finishing the race. If this is not possible, the arms of the runner should be placed around the neck of two helpers, who will see that the participant's legs keep moving, because during the running a great deal of the return circulation to the heart has been aided by the running, but it immediately pools if exercise is stopped, causing severe cramping and in some cases shock associated with hyperventilation and decreased CO₂. It is possible that these boys might go into cardiac stand-still if they quit running too suddenly. Some of the fainting seen in these boys is due to hyperventilation and possible anoxia.

Second as to the heart rate, I don't think we can get a true picture on that. A boy comes in and says, "Well, doctor, what did I do — second, third, or fourth?" The minute you tell him he's seventh or ninth a physiological alteration occurs, and he's changed ten points before you even count it. So I think that you might as well throw pulse rate and blood pressure out the window so far as long distance running is concerned. We know that relatively they are not increased much, because five minutes after running these factors are as normal as in you and I sitting here. We marvel at how well some of these boys look when they finish.

Since you don't have great stress on the heart, where does the change come from? What induces the changes in the electrocardiogram? Heart size?

Well, I could answer that question by asking you one. Suppose a boy flexes his arm all day for six months. What kind of muscles will he have?

Well, that has been done. Helebrandt's subjects exercised a muscle a thousand times a day without hypertrophy.

Yes, that may be true, but was the subject exercising all his muscles?

No, just the biceps and only with light work.

We know any time you put the body under stress the heart itself has to take over the load; in other words you must have an increased stroke volume. In order to have an increased stroke volume you must have either an increase in weight or an enlarged capacity with a slower heart. I think these boys have developed a heart which fills much fuller than yours and mine. When a heart becomes more spherical it fills better. With a slow rate it fills and empties better. With an ordinary heart these boys would have to stop, because they would automatically develop an Adams-Stokes syndrome, and faint. Perhaps 15 years ago an article in the *South African Medical Journal* described a boy who had rheumatic heart disease and who fainted four times in a 26 mile race, yet after laying in the sun for three or four minutes, came to, and still was able to run across the finish line before the other boys did.

Another boy whom we know had a leaky heart, yet displayed great endurance. I think there is a lot of psychosomatic medicine involved with marathon runners. I feel that these folks must have an urgency, a basic desire to excel in something which drives them on just as does a musician who sits and plays and plays, not only until he satisfies others, but until he himself is satisfied. These boys would not endure as they do unless there was some motivating force. After all they pay their own expenses most of the time and supply their own equipment. There has to be some driving urge, some desire to excel in something, or they would never do it.

About increased stroke output and stroke volume. Physiologists, I guess have been puzzled by this, and questioned this. Just recently Dr. Cosgrove from Berkeley visited UCLA, and he has a new theory, unofficially, that the moderate exertion stroke output increases about 50%. Would you guess at how much the stroke output increases?

No, except that I know we took venagrams on these boys, and we also checked their livers, and several of them had livers down $1\frac{1}{2}$ " below the rib margin. Now that, I think, is due to several reasons, but I want to say something else first, and that is this. We find that, if they eat too much, many runners will throw up either during the race or following the race. And you ask why. Now I don't know that this is why, but I'll give you my ideas. In the first place when these boys run all the blood that they can actually use is being utilized for muscular effort. The minute that they stop running there is an increased venous stasis in the intestine and there is also food or water in the stomach which has not gone on through because of the tension. We know that in people under tension the stomach does not empty. The minute this relaxation takes place and the blood rushes back or there is an attempt to re-establish a normal physiology, the internal organs rebel and throw up this material. But maybe that doesn't answer your question.

Yes, that answers the second question. Do you ever hear rales?

No, I've never had any runner go into cardiac failure. There has been no pulmonary edema, and no rales. Their lungs are clear. As a matter of fact, I don't know of any runner we have studied who has even had asthma. Runners with asthma would not have the lung capacity. We have checked the capacity of the lungs of these boys and most of them have at least twice the lung capacity of the average individual.

Do you think short distance running is different physiologically from long distance running?

Yes, I do. However, the feeling nowadays is that long distance runners would be much better if they trained faster for shorter periods, instead of just trying to develop endurance. If the marathon runner can run the 26 miles, there is no problem with his endurance. The problem is attempting to get him to the place where he can key himself to keep up a faster pace. A lot of boys make reasonably good long distance runners, and they may run the 26 miles, but it may take them three hours or three and one-half hours. These boys will increase and do better if instead of saying to them, 'Tomorrow night I want you to run ten miles', you say, 'I want you to run ten miles, but I want you to sprint on five of those miles and just jog on the others.'

What proof do you have that this is important? You say so, but I mean

We have had boys who increased their time with that formula, that's the only reason I can give you.

You have two boys?

We have a dozen boys who have done it. It is universal everywhere now. The Finns were the first who started it. Boys who are good long distance runners have decreased their times by sprinting instead of just going out and jogging along. If they will do sprinting, they will cut down their time remarkably. O'Connor has decreased a half hour in 26 miles, hasn't he, Mike?

(By Mike Portanova). Yes. Let me add this. Twenty years

ago, a marathon runner would run maybe 15 miles one time, 12 the next, 6 the next, and go 18 miles at one steady clip. But we find that with repetition or interval running where he runs at half or three-quarter pace for a shorter distance, a one-half-mile or one-quarter mile, and repeats, many times, he increases the tempo at which he can sustain himself over a longer period. By doing a number of these repetitions he has improved so that he can run a ten mile race or a marathon at a lot faster pace than he could if he had done slow plodding. Because of the competition today he has to run a lot faster. We have taken boys who have never run a marathon and on the first attempt they would run three hours and a half. When you get a boy like this down to where he runs the distance in two hours and twenty-five minutes or two hours and twenty-nine minutes by this method of training, it signifies that this is the way it should be done. And he is not as tired when he is through his workout as he would have been if he had been out on a straight 18 or 15 mile run.

(Dr. Beckner again.) We have seen that in a lot of the boys. For instance I was looking over the results of the last ten mile race we had. We had two top flight boys there, yet they were beaten by some of the younger individuals, 15 and 16 year old boys, because they knew they only had to go ten miles and that was all they put in it. We have quite a problem getting across to these boys that they can run 20 or 26 miles with the same amount of energy that they can run the 10.

Physiologically, there may be a different part of the heart strained in short distance running as opposed to long distance running. Do you know Dr. Kitamura? He is a Japanese physician who has been studying this problem in Japan. Most of his runners have been short distance runners, and he has been impressed with right ventricular and right sided failure and the tendency of the EKG to shift to the right, unlike your case where you mention the EKG transition zone shifts to the left.

No, it shifts to the right, too. If V-1 and V-2 shift to the left, then it must be a left ventricular hypertrophy. If he has enlargement on the right, then it has to come the other way.

No, the transition is at the septum. He was impressed that in short distance runners it shifts toward the left as one would see with right heart strain.

Well, let's go one step further. I would like to know what the height of these individuals was. In a squatty individual the heart sits on the diaphragm. And you must realize that the majority of the Japanese he is dealing with are short individuals with short chests. We don't have that with our boys here. I think we have to follow a little closer on the fact that these are short individuals. When they take a deep breath, the diaphragm automatically goes out to the side. If the diaphragm goes out to the side, the heart goes out that way, too. Therefore, I think it is a physiological change and not a pathological change.

Were your heart patterns just temporary?

No, sir, they were constant. There was a time when we thought that when we found an R-1 or R-2 we were dealing with an early bundle branch block. However, we are now finding this in many people who are normal. As to whether it is a natural defect, I do not have any explanation. Dr. Winsor has done considerable work on that because there is some question as to whether an R-1, R-2, V-1 is a pathological condition or not. We are beginning to find it so often that we are beginning to wonder if it is a normal process.

The Air Force has done a large series of normal health exams and found that at least 10% of them will show this particular condition.

Yes, that's right. The one that I showed really had a very deep R. Those which I have seen showed a small R and the second R was very small but this was really a large R of the bundle branch type. Over a period of years, I suppose I must have seen 15 or 30 cases of persons with R-1, R-2, V-1 who had no symptoms at all. I have checked them out to a five year period and things were exactly the same, so we can call it a congenital defect or at least a conduction defect.

(Cont'd on P. 112)

From The President's Desk

In order for the Association for Physical and Mental Rehabilitation to achieve the essential dynamics of growth and accomplish the objectives all so earnestly desired, it must be realized that the hypothetical bridge to recognition is possible only through the viability, integrity, dedication and effort of all who are eligible to receive of its benefits.

To be chosen as your president is a distinct honor and carries with its role of trust an obligation and grave responsibility for a budgeting of endeavor. Of necessity there must be a sharing of service by all, if any measure of success is to be attained.

I should like you to know that I will deeply appreciate your support for as each of you joins in the endeavors ahead greater strides may be taken toward the horizon we seek to reach. Challenging portals appear as basic precepts which should constitute our platform for the future and indicate various tasks that need be accomplished to fulfill our mission. These requisite beliefs are herein presented:

1. Justify the support and active membership of all individuals who are engaged in work encompassed by our discipline and that contribute to its professional advancement through active participation in the Association's activities or who may be eligible to become a part of the program.
2. Continue to merit the acceptance, affiliation and liaison with: The American Association for Health, Physical Education and Recreation an affiliate of the National Education Association, The Academy of Physical Medicine and Rehabilitation, and the American Psychiatric Association; and to seek recognition, association, counsel and guidance from the American Medical Association and other similar organizations with whom we may value such relationships.
3. Pursue the acceptance and implementation of the Association's Professional Standards for preparation, Affiliation Qualifications for educational and clinical liaison, Accreditation Procedures for approval of training, and adoption of Certification Requirements for all engaged in the field. Review and evaluate the curricula of educational institutions approved by the Veterans Administration Central Office to ascertain their compliance with the requirements approved by the Association.
4. Endeavor to utilize the members of the: Medical Advisory Board, American Board for Certification of Corrective Therapists, and Editorial Board of the Journal to full advantage, as well as to facilitate greater activity by committees and participation on the part of all members.
5. Stimulate increased interest in all types of research as a team project or on an individual basis, and more intensive effort in publishing data as to findings, supportive factual evidence as to present beliefs and ideological ideas of meaning to the profession.
6. Establish procedural policies for greater unified action which may lead to: increased individual competence, professional status and stature, and particularly efficiency of endeavor.
7. Encourage an extension of our orbit to include those engaged in similar enterprises such as: adapted physical education, special physical education, and recreational therapy. Areas of vocational potential must be oriented as to the advantages possible through employment of our specialists and concern: public and private hospitals, clinics, rehabilitation centers, senior citizen establishments, practicing physicians in patient treatment, home care of the physical and mental adult who is ill, and work with the physical atypical and mentally retarded children.
8. Institute investigation and study pertaining to merit salary scales, incentive increases, promotional factors and extension of advancement opportunities for our professional faculty.

The fulfillment of any one of these tasks might well justify our complete allocation of energy, yet it would be most difficult to select and center attention on any particular phase since responsibilities are conjoined as to importance. Perhaps the most significant need in your opinion has not been included but it is certain that the purposeful intent to serve is present.

With such dreams in our minds, desire in our hearts, and God given strength and health may we join together for the firming of our career recognition of our professional worth, and greater opportunities to serve mankind.

CARL HAVEN YOUNG, Ed.D.
President, A.P.M.R.

DR. METHENY PROMOTED

Dr. Ralph S. Metheny, manager of the Veterans Administration hospital at Boston, Mass., has been named area medical director for the VA at St. Paul, Minn., effective August 1, 1960. He will succeed Dr. Oron K. Timm, who will be transferred to VA's central office in Washington, D.C.

REHABILITATION—Cont'd from P. 97

Though this statement in its categorical form may not be justified by the actual results obtainable, it may well serve as an inspiration towards achieving the goal of complete rehabilitation of the spinal cord injured patient.

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SINGLE GOAL—Cont'd from P. 102

III. ADMINISTRATION

2 UNITS

- A. Survey of Situation
- B. Motivation Techniques
- C. Class Organization
- D. Public Relations and Communications
- E. Legal Aspects

IV. PROFESSIONAL EXPERIENCES

6 UNITS

- A. Field Work Experiences—School—Clinic—Hospital
- B. Elementary, Junior & Senior High School Classes
- C. Handicapped Children Schools
- D. Public & Private Clinical Practice Experiences
- E. Hospitals, Medical & Surgery, Neuropsychiatric, Others

V. INTERTHERAPY RELATIONSHIPS

2 UNITS

- A. Changing Perspectives & Recent Techniques
- B. Functions, Similarities, Uniqueness of Therapies
- C. Projections—Recognition, Prevention, Development, Habilitation
- D. Interrelated Research—Didactic, Clinical, Administration

Plenary sessions composed of our advocates must need study together in a similar manner to the present meeting at conferences to discuss mutual problems. At such times a course of action may be determined which should assist in the clarification of many of the controversial concerns and thus enhance our cooperative endeavors for the good of all.

The projecting of curricula development in school and hospital situations is conducive to many bad stomachs, for the tensions derived in attempting to communicate this message as to the importance of such planning results in upsets of the body chem-

istry. Whatever the cost the efforts are well invested if necessary changes take place which will implement the present programs of preparation and bring about better coordinated plans.

PROLONGED EXERCISE—Cont'd from P. 110

You have observed in these people some conditions which we might think of as pathological in other people. Now you are convinced this is not true in these cases. Were you able to do so, do you think it would be profitable to follow these same runners over 30 or 40 years?

Are you talking about the findings in the disease states or are you talking about the actual runners?

I'm talking about the runners.

Let me put it this way. I had hoped that we could do a ten-year study on this. We have a great deal of difficulty in attempting a long range study on this and that is the next project I hope to work on. There are several problems we have to face. There are a lot of good marathon runners who came in from the East for these races, and we don't see them again. Second, boys who are good runners may go back to school and give up running. They have taken sedentary habits. We have others of whom we are not able to find any trace. The next study that I want to do is to see, if I can, what is the result of 10 or 12 years training. And that brings up another problem on these boys that are training all the time. We will take an electrocardiogram for a boy and say that's the basic EKG for that boy and then find he worked out 20 miles this morning, and we didn't know it. Where is your base line on these boys? I may send East to one of these marathon runners we have had and ask him to go into one of the doctors there and get an X-ray on his chest and have an electrocardiogram taken. He takes it late in the afternoon when he's had a big dinner and the heart is pushed off to the left side, and this data throws everything off. There are many variables that you simply have to watch, that's all.

I wonder if it would be interesting to follow runners who were marathon runners and have given it up.

I think it is recorded in the *New England Journal* that they took a bunch of boys from Harvard who had been alternates on the rowing crew there, and tried to trace through to see what happened to those boys 20 years after. Of those who kept up their physical activity, if I remember correctly, a large percentage were alive; of those who left off physical activity, went into sedentary jobs, sat in banks, took executive positions, most of them had dropped off at the coroners, just the same as anybody else.

I would like to point out in a very exhaustive study by Montoye, Van Huss, Pierson et al on the longevity of athletes, that there are absolutely no differences in the types of death; there are no differences in the causes of death; and there are no differences in the age span between ex-athletes and ex-students, at least at Michigan State University over a period of 40 years.

There are so many variables. A number of years ago we had a man who was 66 years old who came with his shorts and wanted to run in the marathon. I checked him over and the boys said, "Well, you're not going to let him run, are you?" I said, "If he wants to run it's all right." He ran 10 or 11 miles, and came in just as fresh as you and I. Well, came to find out he plays tennis 3 or 4 hours a day, and just wanted a work-out with the boys.

It is very difficult in a problem like this because you have so many variables. Second, if you have too many people working on the problem you have problems there too.

"From Other Journals"

Unless noted otherwise, all abstracts have been prepared by Philip J. Rasch, Ph.D.

F. G. St. Clair Strange, Some Aspects of Muscle Mechanics. *Proceedings of the Royal Society of Medicine*, 52:897-899, November, 1959.

The gluteus medius is normally described as an abductor of the hip, i.e., an abductor of the femur on the pelvis. In everyday life this is a rare activity. The real function of the muscle is the abduction of the mobile pelvis on the fixed femur and the prevention of abduction of the pelvis on the weight-bearing hip under the superincumbent body weight. After leg injury the patient tends to reduce the movement of his body weight about the hip by moving his center of gravity laterally. If he brings it vertically over the hip, there is no longer a demand on the gluteus medius and the body weight falls vertically over the top of the head of the femur. The gluteus medius limp results. No amount of leg abduction exercises alone will retrain weak glutei. The essential activities are re-education in trunk carriage, pelvic posture, and walking.

In walking the tibialis anterior prevents the foot from being forcibly plantar-flexed—the obvious feature of the drop-foot gait. It must catch the body weight at each step and transfer the downward acting kinetic energy into a forward direction. This means it must act while lengthening instead of while shortening. In the restoration of function to a weakened tibialis anterior attempts to make the foot dorsi-flex against resistance should be abandoned as an activity unknown in normal life. We should concentrate on pressing a resistance away with the undersurface of the heel.

H. J. Eysenck, et al., Smoking and Personality. *British Medical Journal*, 5184:1456-1460, May 14, 1960.

Discovery of a statistical correlation between lung cancer and smoking has led some investigators to hypothesize that a causal relationship exists. This hypothesis has been severely criticized. Fischer has suggested "that a common cause supplies the explanation," and that "the obvious common cause to think of is the genotype." For the purpose of this study it was postulated that smoking would increase with the degree of extraversion; that the neurotic type would be the heavier smoker; that the rigid personality would be less likely to smoke. The results strongly support the first hypothesis, fail to support the second, and weakly support the third. Genotype differences exist between smokers and non-smokers and between cigarette smokers and pipe smokers. Perhaps extraverts live at an accelerated rate, thus lowering their resistance to disease and simultaneously exposing themselves more to detrimental conditions, whereas non-smokers are biologically self-protective and this is correlated with robustness in meeting disease generally.

H. M. Hodgkinson, R. M. Morris-Owen, and H. M. Williams, *Judo*. *Lancet*, 7129:883, April 16, 1960.

The health and educational value of judo deserve serious attention. The most direct application of judo skill to ordinary life comes from the training and constant habituation to falling safely from all angles. More important is its influence on personal development and its enjoyment value. Even a very weak novice can adapt himself to the demands of judo training and get something positive out of the sport. Major benefits include physical development, the learning of principles of posture and movement, and improvement in emotional poise. Of course, the sport requires effective supervision and competent instruction.

Joseph F. Saunders, Cholesterol: The Perplexing Metabolite. *Naval Research Reviews*, pp. 11-15, April, 1960.

Cholesterol is a topic of scientific curiosity, dietary fadism, and medical controversy. The implications which have associated high levels of cholesterol, heart attacks, atherosclerosis, and other disorders of the blood vessels are based on data which are premature, incomplete, and contradictory. Chemically, cholesterol is a member of a group of crystalline or solid alcohols, known as sterols. Among the tasks it performs are (1) it serves as a structural component of certain tissues; (2) it is a precursor to vitamin D₃; (3) it is a precursor to the body steroids and steroid hormones; (4) it is a precursor to the sex hormones. The body synthesizes about 1.5 g. per day, a quantity exceeding that normally consumed in a day. It is possible in atherosclerosis that the body produces more than is needed or that it cannot handle normal amounts properly. Cholesterol may be manufactured by the nerve from choline and is associated in some way with the transfer of the nerve impulse. High blood cholesterol levels aid in some way with the transfer of the nerve impulse. High blood cholesterol levels aid in identifying disturbances in the fat metabolism of the body and should be considered in health surveillance programs.

Eugene Braunwald, Eugene R. Kelly and Frederick A. Bullock, The Effects of Exercise on Central Blood Volume in Man. *Journal of Clinical Investigation*, 39:413-419, February, 1960.

Considerable difference of opinion exists regarding the influence of muscular exercise on central blood volume. Ten male subjects were studied while pedaling an ergo-cycle. The "central blood volume" was considered to represent the volume within the vascular bed between the site of injection in the right atrium or superior vena cava and the site of sampling in the brachial artery. The mean increase in central blood volume was 285 ml. During 20 minutes of recovery there was a mean decrease of 375 ml. During exercise the oxygen consumption increased from a mean of 144 to 1.011 m³/min/M² BSA, while the cardiac index rose from a mean of 3.42 to 7.99 L/min/M² BSA. It appears that the optional cardiovascular response to exercise is characterized by an augmentation of central blood volume accompanying an elevation of cardiac output commensurate with the increased peripheral oxygen requirements.

Klaus A. J. Jarvinen, Physical Activity of Patients After the Onset of Acute Cardiac Infarction. *British Medical Journal*, 5177:922-925, March 26, 1960.

Complete physical rest is commonly held to be the guiding principle in the treatment of acute myocardial infarction. But attacks are often followed by marked restlessness, associated with severe pain. The patient may get up and walk about in his agony. A study of 102 men and 31 women showed that 72% of the men kept moving after the onset of acute myocardial infarction, some of them walking long distances. All of the women immediately stopped work. The response of the men was unwise, as it appears that if physical activity is prolonged, the outcome may be fatal. This may account for the high mortality from acute myocardial infarction among men.

A. Grunwald and Z. Silberman, Anterior Tibial Syndrome. *Journal of the American Medical Association*, 171:2210-2213, December 19, 1959.

Football players have experienced severe pain in the anterior tibials after strenuous exercise, followed by difficulty in moving the foot and toes. There are two main theories of the pathogenesis of muscle changes: (1) it results from vascular spasm or other vascular changes; (2) the retention of fluid in the muscle, edema, and small hemorrhages produces a rise in tension which impairs the circulation and may lead to necrosis. The latter appears the more likely. The leg must be kept at absolute rest and the tension must be relieved by incising the fascia.

K. Suzuki, Studies on the Choking in Judo, Particularly on Its Electroencephalogram. *Japanese Journal of Physical Fitness*, 6:75-94, August 20, 1956.

It is popularly believed that a man who is choked will fall unconscious because of the closing of the windpipe. In this study the effects of kata-juji-jime (half cross choke) were compared with the effects of a sphygmomanometer wrapped around the neck. These differ in that pressure is placed on the sides of the neck in kata-juji-jime, and the sphygmomanometer applies some pressure to the windpipe. However, in either case the subject becomes unconscious, indicating that the pressure on the windpipe has very little to do with it. The period of time before losing consciousness after pressure is applied is relatively short. A person does not suffocate when his head is put in water for that short a time. The period required to regain consciousness is also short.

The loss of consciousness is not due to stimulation of the vagus nerve. When this nerve is stimulated the heart normally pumps more slowly and the blood pressure falls. If the sympathetic nerves are stimulated the opposite reaction takes place. Waller and Czermak and Hering applied pressure to the neck region and found a slowing down of the pulse, which they attributed to pressure on the vagus. Eben refuted this by saying it is due to the stoppage of the blood flow returning to the heart. Saito found the blood pressure decreased and the pulse became slower or faster depending on the area where the pressure is applied. The rise in blood pressure and the increased pulse rate during choking are not due to pressure on the vagus, but to the carotid sinus reflex.

The main reason for the loss of consciousness in kata-juji-jime is due to the stoppage of the flow of blood to the brain, which in turn causes a sudden loss of oxygen in the brain and the stoppage of the metabolic cycle. This phenomenon is similar to an epileptic attack. Besides the loss of consciousness and spasm, there is an excitement of the sympathetic nervous system. The rise in blood pressure and the quick pulse can be interpreted as a reflex action of the carotid sinus.

As to the question of whether this hold is dangerous, we can say that it is. They might have been physically weak or sick, but there are instances where people have died from jime. However, it is safer than the knockout of boxing. While it is not necessary to make this hold illegal, it would be desirable to establish rules as to the degree of choking. No after effects were observed in these experiments.

(J. Aoki.)

James Wall, Tennis Elbow. *Industrial Medicine and Surgery*, 29:173-175, April, 1960.

Over the last four years 95 cases of tennis elbow were experienced at one General Electric plant. The exact pathology of this condition is obscure, but it appears to be a traumatic lesion involving the periosteum over the lateral humeral epicondyle and the inserting fibers of the conjoined tendon, a fascioperiostitis with local edema and perhaps adhesion formation. About one cc of 2% novocaine is injected, followed by one cc of hydrocortone acetate. The elbow usually becomes acutely painful as a result of these injections and the patient is supplied with empirin compounded with codeine. A total of 88.6% of the patients were completely or significantly relieved by this treatment, although some required additional injections. There have been no untoward reactions or complications.

Wilson Johnston, Vitamin E for Athletes. *Lancet*, 7129:882, April 16, 1960.

Vitamin E is given extensively to athletes in Australia. Experiments with English athletes gave impressive clinical results in that it appeared to produce increased stamina and delayed fatigue. Comprehensive studies under controlled conditions are now being undertaken.

S. J. Friedberg, et al., The Effect of Exercise on the Concentration and Turnover of Plasma Nonesterified Fatty Acids. *Journal of Clinical Investigation*, 39:215-220, January 1960.

Recent work has suggested that the albumin-bound fatty acids of the blood (FFA) might be oxidized directly by muscle. Few human experiments on this subject have been published and little information is available. A study of male volunteers exercising on a stationary bicycle showed that exercise lowers FFA by accelerating its removal from the blood. The fate of the removed FFA was not determined. There is a significant rise in plasma FFA concentration immediately after exercise.

Medical Officers of Schools Association. *Lancet*, 7117:209-210, January 23, 1960.

Boxing was discussed at the January meeting of the Association. Dr. MacDonald Critchley warned of the danger of concussion of the medullary centers in the mid brain and the harm that may arise from it. Dr. J. A. Waycott stressed the point which distinguishes boxing from all other sports: the injuries are intentionally inflicted. Others argued that properly supervised boxing was of great value. Several speakers urged that judo be substituted for boxing, as it was superior as a means of self-defense and the rules are designed to avoid injury. Fencing was also recommended as a substitute.

Erik Hohwu Christensen, Rune Hedman, and Inga Holmdahl. The Influence of Test Pauses on Mechanical Efficiency. *Acta Physiologica Scandinavica*, 48:443-447, 1960.

Two subjects performed a given quantity of work on an ergocycle within one hour. The work was carried on under four conditions: I, without rest pauses; II, 2 min. work followed by 3 min. rest; III, 0.5 min. work, 0.75 min. rest; IV, 24 min. work, 6 min. rest. The energy cost per kpm of work or the mechanical efficiency were practically the same in all cases. With the total number of heart beats above resting level as an index of fatigue, condition III was best.

M. S. Goldstein, Glucose Transport Theory of Insulin Action. *Annals of the New York Academy of Sciences*, 82:378-386, September 25, 1959.

A barrier to the entry of sugars exists at the surface of cells of skeletal muscles, heart, and adipose tissue. This barrier is overcome by a specific system which transports glucose from the extracellular to the intracellular position. Forced vigorous contraction of large masses of skeletal muscles releases some humoral factor which activates this system and augments rates of intracellular transport of the same sugars that are acted upon by insulin. Of the transport systems present, those related to glucose could be viewed as existing in some state of inhibition relieved by insulin and by some humoral factor released from strenuously exercising muscle. The precise nature of the transport system may be a function of the particular tissue and the particular animal species.

E. J. Klaus, Bibliographies and Periodicals of Sports Medicine written since World War II. *Sportarztliche Praxis*, Oct., 1952, 87-94 (in German).

Klaus thoroughly discusses the various national and international publications concerning sports medicine. In addition, there is much information about the various sports medicine organizations. He describes the people responsible for, and the events leading to, the formulation of sports medicine bibliographies and periodicals. There are 37 such publications included in the references. The only American publication noted is the *Index and Abstracts of Foreign Physical Education Literature* by Phi Epsilon Kappa Fraternity.

WRP

T. E. Pilkington, *et al.*, Diet and Weight-Reduction in the Obese. *Lancet*, 7129:856-858, April 16, 1960.

Kekwick and Pawan stated that during short periods on isocaloric sub-maintenance diets, weight loss was greater when most of the calories were supplied by fat than when they were supplied by CHO, which they attributed to the greater specific dynamic action of fat. The present study repeated their experiments over a longer period and found no differences in the rates of weight loss on the two diets. The patients on the high diet complained of tiredness and nausea, while those on the high CHO diet complained of hunger.

Edward J. Werdein and Laurence H. Kyle, Estimation of the Constancy of Density of the Fat-Free Body. *Journal of Clinical Investigation*, 39:626-629, April, 1960.

Estimations of body fat by densiometer measurements are predicted on the assumption that the fat-free body mass of normal persons possesses a constant density. However, Keys and Brozek have pointed out that the density of the fat-free body is unknown, and could deviate with overfeeding or starvation. When current techniques of estimating total body fat were applied to subjects with a wide range of body build and varied physical fitness, obesity, and age, a considerable variance of fat-free body density was found. While useful for the estimation of change in body fat, densiometric and volume distribution methods possess inherent weaknesses.

Anonymous, Brain and Personality. *American Journal of Psychiatry*, 10:938-939, April, 1960.

Intellectual capacity does not depend on brain size, although a certain minimum size is necessary for learning and adaptation. Within a given species the size of the brain varies directly with the size of the individual; man has from 230-250 g. of brain per foot of his length. The human brain attained its present anatomical complexity and functional potential at least 50,000 years ago. The functional potential of the human brain has probably never been fully used, although occasional individuals may have approached it. Civilization has set aside the laws of natural selection and cultural selection now exploits the brain. All races of *homo sapiens* have essentially similar brains and are potentially equal in intellectual capacity.

Book Reviews

Guidance of the Young Child, by Louise M. Langford. (New York: John Wiley & Sons, Inc., 1960, 349 pp., \$6.25.)

Looking for a gift for a high school or college graduate—or new parents? Beginners in child care will appreciate this book, its practical suggestions in child guidance, its non-technical readable text, its illustrative case material, excellent photographs, and most helpful annotated bibliography. This book is not suitable for one who has undergone a minimum of professionally supervised training with preschool children. The author is well qualified to judge the needs of beginning students in child guidance. Mrs. Langford is a parent and an assistant professor with the Department of Family and Child Development at Kansas State University's School of Home Economics.

The opening chapters offer suggestions for evaluating nursery schools and briefly discuss the general areas—physical, mental, emotional, and social—of child growth and development. Other chapters discuss guidance techniques and relate them to various kinds of activities: play, sleep, music, toileting and nature experiences. The final chapter deals with handicapped children, calling attention to the similarity of needs of all children and the adult attitudes most conducive to their satisfactory development.

CS

Track and Field for Coach and Athlete, by Jesse P. Mortensen and John M. Cooper. (Englewood Cliffs, N.J. Prentice-Hall, Inc., 1959. 246 pp. n. p.)

There appears to be a trend for modern coaching texts to be written by a combination of a coach and an academic staff member. There are many benefits to such collaborations. The book herein reviewed is one of the best organized coaching manuals that the writer has seen. The opening chapter tells the coach what to look for in selecting his squad, emphasizing that normally he will encounter few "naturals" and must expect to develop his own athletes. Each of the following chapters deals with a single event. The history of the activity is touched upon, the characteristics of the successful performer are depicted, the accepted form is described, and training, strategy, and helpful hints are presented. Citations to pertinent research studies are given where such data are available. Unfortunately, these are not listed in the index, which sometimes makes a particular item hard to locate, and Stampfl's book does not appear to be mentioned. The text is profusely illustrated with outline drawings made from moving pictures of national, Olympic, and world champions. A particularly good feature is the drawings depicting the footwork in the weight events. Numerous valuable hints seldom found elsewhere, such as how to determine the stronger leg, are scattered through the text.

It is notable that the value of weight training is stressed throughout the work. It is, however, somewhat confused by the fact that the terminology used is not always standard ("Do 5 sets of 3 to 5 repeats") and in some cases the instructions are not at all clear ("Do deep knee bend—jumping just barely off floor.") Whatever this may mean, deep knee bends involve a certain amount of hazard when any considerable amount of weight is used and it would seem much safer to recommend the use of squats. The basic question, the advisability of doing either full squats or deep knee bends, is not discussed.

In general the presentation is shorter than in the Bresnahan-Tuttle-Cretzmeyer text (reviewed here Mar.-Apr., 1960.) To take a chapter at random, there are 28 pages devoted to the pole vault in this book as compared with 39 in the latter. Inevitably this means a sacrifice of detail—which the busy high school coach may consider a gain. The final chapter brings together practical suggestions for motivating track athletes. This is probably unique among such texts.

The book should prove an eminently practical and useful manual for the track coach and is highly recommended to his attention.

PJR

Modern Health and Figure Culture, by Oscar Heidenstam. (London: Faber and Faber, Ltd., 1959. 119 pp. \$1.80.)

Acceptance of weight training as a suitable activity for girls has been slow in coming. To those familiar with the field, the fact that George Bruce's unparalleled list of beauty queens is the product of progressive resistance exercise is common knowledge, but this is the first book the reviewer has seen which is devoted to PRE for women. Ironically enough, Bruce's name is not even mentioned. The text is popularly written and is designed for the non-professional reader. In many instances the professional reader may feel that the generalizations are too broad and that the presentation is too brief to be satisfactory. The book covers a broad field of exercise—calisthenics, household apparatus, chest expanders, and weights. One piece of apparatus, the picas, consisting of two long sticks affixed to a weighted base, is new to this reviewer. Special weight training programs for specific purposes are described, and training for sports and during pregnancy is discussed. The book is illustrated with photographs and drawings, but lacks an index and bibliographic citations. It was apparently planned as a companion piece to Johnson and Heidenstam's *Modern Body-Building* (reviewed here June, 1960) and should appeal to the equivalent audience among the fair sex.

PJR

Exercise and Fitness. (A Collection of Papers Presented at the Colloquium on Exercise and Fitness). (Chicago The Athletic Institute, 1960. 248 pp. Paper. \$3.00.)

Almost everywhere in the United States physical education is on the defensive. Of the multitude of problems which it faces, two questions appear of the life and death variety: (1) How can it be developed into a discipline, and (2) Why should a person be physically fit? While all physical education programs are conducted on the assumption that physical activity makes significant contributions to physical fitness, the scientific evidence to justify this assumption is limited. In an attempt to bring the evidence together, on December 6-7-8, 1959, the University of Illinois College of Physical Education and the Athletic Institute sponsored a Colloquium on the scientific aspects of exercise and fitness.

The names of most of the participants will be familiar to our readers. Their views are well known and there is comparatively little in the publication which will be new to the physical educator. Naturally the quality of the papers varies widely, and occasionally a speaker goes astray. In stating that Hammond and Horn and Doll and Hill have shown that there is a direct causal effect of tobacco smoking to lung cancer, MacFarland demonstrates that he is unfamiliar with the critical and authoritative reviews of those studies made by Berkson (*Proceedings of the Staff Meetings of the Mayo Clinic*, April 15, 1959) and by Norton (*American Scientist*, March, 1959). And one might wonder why he has been chosen alone among mortals for the divine revelation that his will is God's will insofar as smoking is concerned. Johnson's paper, "What Should a Physiologist Teach About Muscular Exercise and Fitness?", never comes to grips with the subject. Perhaps this is just as well—in at least one university the physiologists led the attack against physical education.

Several of the speakers dealt with the relationship between exercise and heart disease. Like smoking and cancer, this is an extremely complex problem and conclusions must be drawn with care. In the words of Raab, "no single factor such as diet, emotional pressures or lack of physical exercise, can be made fully responsible for the present-day high incidence of functional and degenerative heart diseases; rather do their varying combinations become pathogenic through mutual aggravation."

According to the Foreword, each talk was followed by a discussion. None of the discussion material is presented. This is unfortunate, since quite often the discussion is the most valuable part of a presentation.

Nearly 30 years ago Steinhaus published his classic *Chronic Effects of Exercise*. To some extent this text will meet the long-standing need for an updating of his work.

PJR

Ciba Foundation Symposium on Extrasensory Perception, edited by G. E. W. Wolstenholme and Elaine C. P. Millar. (Boston: Little, Brown and Company, 1956. 240 pp. \$6.00.)

It is unfortunate that a review copy of this book has been so long in reaching us. On the other hand, it probably makes little difference in the review itself, since the reviewer knows of no recent developments which would affect his assessment of its contents. The great difficulty with ESP studies is that to date psychical researchers have failed to produce an experiment which is reproducible in the scientific sense—perhaps because such experiments seem to depend upon a Gestalt in which the experimenter, the subject, and perhaps others are involved. Disagreement over evaluations of the evidence and the abundance of unsubstantiated claims constitute other difficulties. It is suggested by Soal that ESP is only a phase in the life of certain individuals and not a permanent ability. Several participants raise the question of whether it is an archaic survival or an evolutionary development. A rather curious outcome of ESP studies has been the finding that certain tables of random numbers are not at all random!

The members of the symposium considered primarily Zener card guessing experiments, with some attention to ESP in primitive man and to the homing instinct in pigeons. Surprisingly little objection was raised to Amadous' sum-

mary of the situation: ESP exists; no operational definition of it can be given; it appears to be a transfer of information; if it exists at all, it must play a part in every psychical activity; what is needed is a general hypothesis that will synthesize psychology and parapsychology. One curious fact emerges—if the PK effect really exists, we shall have to accept the reality of magic! It is this possibility which appears so unnerving to the psychoanalysts and explains the reluctance of most of them (although Freud was not among this number) to concede the possibility of ESP.

The participants seem to have come out of the same doors wherein they entered. Perhaps no earthshaking results were achieved, but a lot of underbrush was cleared away.

PJR

Efficiency of Human Movement, by Marion R. Broer. (Philadelphia: W. B. Saunders Company, 1960. 351 pp. \$6.00.)

The purpose of this work is to discuss what constitutes efficient movement, the basic physical laws which determine it, and the problems involved in developing it. The book is neither a kinesiology text nor a coaching manual. The author emphasizes that she is not attempting to describe correct form for any activity; her purpose is only to present the principles which underlie it.

The first part of the text deals with mechanical factors—gravity and buoyancy, equilibrium, motion, leverage, force, rebound and spin, and projectiles. The physical laws involved are described so simply that any student with a background in high school geometry will have no trouble in grasping them. She then takes up the application of these basic mechanical principles to fundamental skills—standing, walking, running, falling, sitting or lifting. It is surprising to find that the chapter on falling contains no reference to the techniques employed in judo, and some presentation in the chapter on lifting of the application of the basic principles to the handling of the invalid would certainly have been welcomed by many. Part IV discusses the application of the basic principles to sports and dance. Since the material is directed primarily to women, the activities considered are principally of a co-educational nature. A few pages on the teaching of movement conclude the text. The book is profusely illustrated and adequately indexed.

Broer's book will probably find its greatest use in classes in analysis of human movement in which the scientific background of the students is not sufficiently high to permit use of Bunn's *Scientific Principles of Coaching* (reviewed here September, 1958) or in body mechanics courses in which the emphasis is on the activities of daily living rather than on athletics. So far as the reviewer is aware, there is no other text specifically designed for this purpose. The book should prove very useful for such classes and a helpful reference for students in kinesiology. It is recommended to the attention of readers of this *Journal*.

PJR

Sex in Psycho-analysis by Sandor Ferenczi, and **The Development of Psycho-analysis** by Sandor Ferenczi and Otto Rank. (New York: Dover Publications, Inc., 1959. 356 pp. \$1.85. Paper.)

In this authorized translation by Ernest Jones there are 15 papers which are reproduced in order of the original appearance. To the reader acquainted with psychoanalytic concepts the variety of papers herein will give a background to the approach of Ferenczi. Among the multitude of areas covered are the papers on Dream Analysis, Obscene Words, Onanism Stages in the Development of the Sense of Reality, Symbolism, Homosexuality, and Interest in Money. The last portion of the book consists of 68 pages with an authorized translation by Caroline Newton which is directed primarily to practicing analysts and serious students of psychoanalysis. The English version covers the Analytic Situation, Historical Critical Retrospect, The Reciprocal Effect of Theory, and Practice, Results, and Future Prospects.

The elucidation of the material apparently is under the joint authorship of Rank and Ferenczi, written in 1922, with major criticism being written by Ferenczi and the chapter

on the Analytic Situation by Rank, with the work being jointly reviewed.

To the serious student and practitioner of analysis this paperback will provide an opportunity to become better acquainted with the theoretical concepts of Ferenczi and Rank. Although concepts in psychoanalysis are constantly being modified, an historical background should be of value in clarifying present concepts.

DCL

Kinesiology, by Katharine F. Wells. Third Edition. (Philadelphia: W. B. Saunders Company, 1960. 515 pp. \$5.75)

This is the third edition of a text which has been well-received by kinesiology instructors. The material of the second edition has been expanded and corrected in light of the electromyographic investigations which have appeared in the intervening five years, and the chapter on the applications of kinesiology to physical therapy and occupational therapy also has been expanded. However, the corrective therapist will continue to seek in vain for mention of his specialty. There is a mirage of corrective therapy in the chapter "Exercises for conditioning and corrective purposes," but a close look reveals that the only corrective purposes listed are for posture and for "correcting" the exercise itself, i.e., a common fault of the squat-thrust and dip (Burpee with push-up) is allowing the back to sag and this is corrected by strengthening the abdominal muscles and training them to prevent hyperextension of the lumbar spine when the body is in the extended position. The only conditioning exercise listed as such is the "Hurdle Push-Up—a Conditioning Exercise for the Dance."

While the electromyographic material has been brought up-to-date, the same cannot be said for some of the other material. For example, Wells states in both the 1955 and 1960 editions that further investigation is needed regarding the relative influence of the forearm position on the strength of elbow flexion. A study of this problem was presented in the *Research Quarterly* as early as October, 1956. This may be an isolated instance, but one's confidence is lessened by it. One weakness which it is hoped will be corrected in future editions is that of certain photographs. There are four photos titled "An example of skillful performance," only one of which represents a modern skillful performance. The high jumper is using an obsolete technique, the defensive football player has missed his tackle, the ball carrier is straight-arming air, and none of the football players is wearing a helmet. While these items may be picayune, they detract from the effectiveness of the text.

A very valuable section of the text is Wells' discussion of the mechanics of certain activities, and there is included an outline for a 45 hour course in kinesiology which will be of considerable help to beginning instructors.

WRP

Guide to Proper Body Mechanics and Patient Self-Care. (Los Angeles: V.A. Center, n. d. 26 pp. n. p. Paper)

This manual was developed by the Corrective Therapy Section at the General Medical and Surgical Hospital, Veterans Administration Center, Los Angeles, to teach ward personnel the most efficient ways of physically moving patients and to teach patients how to utilize what powers they have left in order to achieve a greater degree of self-care. It is actually a detailed outline of a five hour course, broken down into the amount of minutes to be spent on each topic. The directions are clear and the text appears to be both practical and useful. As a minor criticism, the paragraph entitled "Basic differences in male and female anatomy" does not appear to be in accordance with Carpenter's "An Anthropometric Study of Masculinity and Femininity of Body Build," *Research Quarterly*, December, 1941. There are no illustrations, but a short bibliography is included.

PJR

BOOKS RECEIVED

A Way of Life, by William Osler. (New York: Dover Publications, Inc., n. d. Paper. 30 pp. Free.)

Reprint of talk given by Osler in 1913

Theoretical Studies in Social Organization of the Prison, by Richard Cloward, et al. (New York: Social Science Research Council, 1960. 146 pp. Paper. \$1.50.)

The high proportion of recidivists in most prisons reinforces the prevailing belief among the inmate population that "you can't make it legitimately on the outside," and among the taxpaying population that "once a con, always a con." In his interdisciplinary study, seven persons under the sponsorship of the Social Science Research Council met during 1956 and 1957 as a Conference Group on Correctional Organization to inquire into the nature, organization, and aims of the penal system and its effect on the groups—inmates, staff, administration, and community—with which it deals.

In the first chapter the inmate social system is analyzed. "The inmate, who has to live under conditions of deprivation even in the most humane institutions, develops norms for his protection, a status system for the maintenance of his self-image, and adaptive behavior to cushion the deprivations; he thereby retains a modicum of control over the situation." The second chapter deals with the prison community, especially the informal organization of inmate groups. Foremost among the questions dealt with: "How are men motivated to live under conditions of severe deprivation and status degradation?" The author points out that the inmate social organization is extremely functional but at the expense of adherence to formal rules and inmate rehabilitation. The third chapter reports on a prison undergoing, over a period of several years, a transition—sometimes violent—from an authoritarian, traditional, maximum-security institution to one with some inmate self-government and a more liberal atmosphere. The fourth chapter analyzes the problems of administration in an institution oriented toward treatment and rehabilitation. Then, the community is discussed—the interest groups which sometimes influence prison administration. The final chapter raises several problems for further study.

The conference group presents a pessimistic view concerning the feasibility of achieving treatment and rehabilitative objectives within the present structure and organization of the prison. Some of the impasses in the field of correctional treatment are derived from the conflicting mandates imposed on the penal system by a community's demand that the same institution achieve the aims of custody and punishment on the one hand, and treatment and rehabilitation, on the other. The impossibility of maximizing both aims is obvious from these studies.

CTS

Twenty-Eighth Annual Survey of Football Fatalities, by Floyd R. Eastwood, et al. (Hanover, N. H.: American Football Coaches Association, 1960. 17 pp. Paper. Free)

During the fall of 1959 18 fatalities were directly associated with football and 11 more were indirectly associated with the game. Four deaths were due to heat exhaustion, while only one other such death had been reported in the preceding 27 years. The *Survey* recommends attention to suggestions given by the Mecklenburg County Medical Society of North Carolina.

PJR

DR. KEMP NEW MANAGER

Dr. Hardy A. Kemp, 57, director of professional services at the Veterans Administration Hospital, Portland, Ore., since April, 1958, has been appointed manager of the VA hospital, Atlanta, Georgia. A native of Monett, Mo., Dr. Kemp received his B.S. and M.D. degrees from St. Louis University in 1922 and 1928 respectively. A former professor of bacteriology and preventive medicine at Baylor University College of Medicine. Dr. Kemp was Dean of the College of Medicine at the University of Vermont from 1939 to 1941. He was Dean of the College of Medicine and Professor of Preventive Medicine at Ohio State University from 1945 to 1948. From 1948 to 1957 he was Professor of Preventive Medicine at Baylor University College of Medicine and medical consultant for the Liberty Mutual Insurance Company.

Dr. Kemp entered the VA service in January, 1958.

News and Comments

CALIFORNIA PHYSICIAN CITED BY PRESIDENT'S COMMITTEE



Dr. John H. Aldes, Director, Department of Rehabilitation, Cedars of Lebanon Hospital in Los Angeles, was named by the President's Committee on Employment of the Physically Handicapped to receive the 1959 Physician's Award.

An orthopedic surgeon and a specialist in the problems of the physically handicapped, Dr. Aldes is an outstanding leader in the field of rehabilitation. He is internationally known for the work he is doing in making possible the return of physically handicapped persons to a useful place in society.

The Physician's Award is an illuminated scroll with an appropriate inscription over the signature of the President of the United States. It will be presented to Dr. Aldes at the annual banquet of the Congress of Industrial Health of the American Medical Association in Charlotte, North Carolina, on Tuesday, October 11, 1960.

Each year, Chairmen of Governors' Committees on Employment of the Physically Handicapped and Presidents of State Medical Societies cooperate with the President's Committee in nominating physicians who have made outstanding contributions to the welfare and employment of handicapped workers. Selection is made by the Medical Committee of the President's Committee, and the scroll is sponsored by the American Medical Association.

Since its inception, previous recipients in the Physician's Award program were: 1952, Dr. Henry H. Kessler, Medical Director, Kessler Institute for Rehabilitation, Newark, New Jersey; 1953, Dr. Frank Hammond Krusen, Mayo Clinic, Rochester, Minnesota; 1954, Dr. Harold A. Vonachen, Medical Director, Caterpillar Tractor Company, Peoria, Illinois; 1955, Dr. Grady R. Rowntree, Medical Director, Fawcett-Dearing Printing Company, Louisville, Kentucky; 1956, Dr. Rufus B. Crain, Rochester, New York; 1957, Dr. Lenox D. Baker, School of Medicine, Duke University, Durham, North Carolina; and 1958, Dr. Howard A. Rusk, Director, Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, New York City.

Dr. Aldes was selected for the 1959 award because of his outstanding contribution to the President's Committee year-round program of achieving equality of opportunity in employment of the physically handicapped. He was sponsored by Mr. G. D. Bradley, Chairman of the Los Angeles Coordinating Council, and recommended by Mr. Justin Johnson, former Chairman of the California Governor's Committee.

A Diplomate of the American Board of Orthopedic Surgery, Dr. Aldes received his medical degree in 1937 at the University of Minnesota Medical School. Subsequently, he completed a comprehensive series of post graduate training in orthopedics and allied subjects, and has had numerous hospital and university teaching appointments. Dr. Aldes is very active in various medical societies, civic organizations, and medical advisory boards, and is the author of many publications, books, and scientific papers in the field of orthopedic surgery and physical rehabilitation. He is a member of the Advisory Board of the Association for Physical and Mental Rehabilitation.

DISABLED VET WINS DEGREE BY TELEPHONE

A paralyzed veteran who has been going to college by telephone for the past two and one-half years graduated last month with high honors. Robert Mitchell, 43, of Glen Cove, Long Island, N.Y., all four limbs paralyzed by polio incurred in military service, received his Bachelor of Arts Degree, magna cum laude, from C. W. Post College in Brookville, L.I.

Mitchell's disability confined him to his home. Nevertheless, a leased telephone line between his home and his school enabled him to listen to lectures as they were delivered in the classroom and, with a flick of a switch, take part in class discussions. His telephone training program was arranged for by the Veterans Administration under a vocational rehabilitation training program for disabled veterans.

Mitchell was in military service from 1941 to 1953, when polio struck him. His legs are completely paralyzed; but he has just enough movement in his arms to type and hold a pencil.

Mitchell's next aim will be to get his master's degree in politics and government. He expects it will take him another 18 months.

Some 615,000 disabled World War II veterans and 64,000 disabled Korean Conflict veterans have taken rehabilitation training under VA auspices. The World War II program comes to an end on July 25 of this year, but the companion program for disabled Korea veterans has a number of years to run. Among the requirements for vocational rehabilitation training are a service-connected disability, and other-than-dishonorable discharge and an established need for training to overcome the handicap of the disability.

ADS SEEK TO HELP

Twenty-one newspapers of California's San Fernando Valley are donating classified ads worth more than \$1,000 a week for a bold new venture in locating jobs for the physically and emotionally handicapped. Originated by Dr. Leslie Navran, psychologist of the Sepulveda, Calif., Veterans Administration mental hospital, the project is a joint effort of the hospital with the press and the California State Department of Employment branch offices at Van Nuys and San Fernando.

Each ad presents two former mental patients ready to leave the Sepulveda VA hospital and two physically handicapped persons nominated by the State Department of Employment. Employers interested in considering these "professionally endorsed patients" and "professionally evaluated people" may arrange for interviews by telephoning the sponsoring agency. They receive detailed information about prior work and educational experience and are told the professional assessment of the job candidates' vocational aptitudes, abilities, interests and limitations. Those who hire former patients of the hospital are provided free consultation.

Dr. Navran reports a total of 25 responses to the first 48 ads, with many of these resulting in job placement.

The project reflects the Veterans Administration's conviction that the old relationship in which the community considered the mental hospital only a custodial institution is growing into a "working partnership" in which the community understands the hospital's treatment capability and takes an active part in final rehabilitation of patients. Otherwise, the community will find itself in the impractical position of first paying for and then undoing efforts of the hospitals to help patients, said Dr. Jesse F. Casey, director of psychiatry and neurology service for the VA in Washington, D.C.

Although today's modern mental hospital can treat and return to the community up to 85 percent of its first admissions within a year, one out of every two patients released from mental hospitals in this country is rehospitalized, Dr. Casey pointed out, adding: "Certainly one of the major contributing factors to their rehospitalization is the stress of inability to find and maintain suitable employment."

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CORRECTIVE THERAPY STAFF AT THE MARION (IND.) V.A. HOSPITAL. (L. to R.) Maurice Terry, William Gallo, John Lewis, George Burke, Eugene Isaacs, Ken Smith, Bill Barnard and Dennis Rice, Chief.

VA STUDIES VOLUNTEERS FOR HOSPITAL SERVICE

Personal contact by members of voluntary organizations is the most effective means for recruitment of community volunteers for hospital service, but retention of volunteers depends primarily upon the hospital staff. These and many other conclusions based on the Veterans Administration's 15-year, nationwide experience with hundreds of thousands of hospital volunteers are detailed in a new VA publication, "Recruitment and Retention of Volunteers for Service in VA Hospitals," the report of a two-year study made by the VA Voluntary Service, (VAVS) National Advisory Committee.

The National VAVS Committee, composed of 44 national organizations representing civic, service, religious, welfare, and fraternal groups, is the VA's arm for volunteer service to sick and disabled veterans in the agency's 170 hospitals, 18 domiciliaries and in the community.

Newspaper and radio appeals, hospital programs and tours, and friends who are VA patients are also factors in influencing volunteers to offer their services. The factor of most influence was the feeling on the part of the volunteers that the hospital staff really wants their services. Other factors included pleasant associations, the feeling of making a needed contribution, full utilization by the staff of the volunteer's time and abilities and good staff supervision. Recognition of volunteers by length-of-service awards was considered not nearly so important as pleasant association and the feeling of being needed.

The two greatest obstacles to recruitment are lack of transportation and distance.

Volunteer services of many more men could be used in VA hospitals in assignments such as radio repair, horticulture, photography, and carpentry for which men are especially suited. The hospitals also would welcome more volunteers under 21 and retired "senior citizens."

Large commercial, industrial, fraternal and religious organizations might be contacted so that their employees approaching retirement could be interested in service with the VAVS.

Volunteers are needed in each of the following categories: recreation assistants, patient menu selection and feeding assistants, nurses' aides, escorts for patients, performing personal service for patients, such as shopping and letter writing, and library, occupational therapy, and motion picture projectionist assistants.

'NIGHT HOSPITAL' CITED

When quitting time comes at shops and offices across the nation these days, a sizable group of workers collect their belongings and head for the wards of Veterans Administration psychiatric hospitals. Veterans in the last stage of recovery from mental illness, they spend the night at the hospitals, receive drugs or other treatment, and the next morning receive a pass from the hospital and leave for another day's work.

They are benefiting from the "night hospital," an advance in treatment of mental illness tested widely in Europe and now used increasingly in the United States.

Why is the night hospital needed?

Dr. Jesse F. Casey, VA director of psychiatry and neurology service in Washington, D.C., explained that many patients long hospitalized for mental illness require additional help after specific therapy has been given.

"One of the important means of treatment for them is their association again in society," Dr. Casey said. "Many cannot make an abrupt change from hospital to community. Remaining in the hospital night program for a limited time often enables them to leave the hospital and return home."

During the past few years, most VA psychiatric hospitals have set up night care for long-term patients.

The veterans reach the night program after months or years of treatment, vocational counseling, and participation in therapeutic work assignments at the hospitals. Stay in the program is limited generally to less than a year and often to six months or less.

Dr. Casey said the night care program is proving its success in the VA by the excellent work records of patients and the high percentage of recoveries and hospital discharges among the group.

Nationwide, the VA night hospital patients include men holding jobs as insurance salesmen, mechanics, truck gardeners, and department store clerks, and in many other types of semi-skilled and unskilled work.

Many of the night care patients have made the transition from hospital to community after being hospitalized 15 to 20 years, Dr. Casey said.

Patients for the night hospital are carefully selected by VA medical staff members, to fit the treatment to the needs of the veterans and to protect employers and the community. Only those who have shown they can accept responsibility and make good employees are chosen.

Much of the credit for success of the night care program belongs to employers in communities where VA hospitals are located, Dr. Casey pointed out, adding:

"One of the greatest allies our patients have in their fight for recovery is the employer who gives them the opportunity for wholesome work experience outside the hospital again."

LARGER NEW CATALOG ISSUED BY PRESTON

J. A. Preston Corp. has announced the issuance of the new Preston Catalog No. 1065, which the Company describes as "the largest in our long service to the Profession—208 pages, 1057 illustrations, and up-to-date price information on over 2500 products."

Among the features attributed to the new catalog are its functional organization, concise descriptions, and inclusion of new and additional famous lines.

The organization of the catalog enables all items in any category to be located instantly and compared with similar products to make buying decisions easier and more accurate. The descriptions are written with the objective of presenting a maximum of accurate, useful information in the fewest possible words.

Copies of the catalog are being mailed to all physicians, therapists and hospital departments on the Preston mailing list. A copy may be obtained by writing J. A. Preston Corp., 175 Fifth Ave., New York 10, N.Y.

VA ADDS SECOND ATOMIC MEDICINE UNIT

A major new instrument for atomic medicine has been installed at the Veterans Administration center in Los Angeles. Known as a human-body radiation counting system, the 25-ton steel room, with instrumentation, makes possible measurement of the amount of radiation present in the body from fallout, medical dosage, handling radioactive materials, or other sources.

Dr. William H. Blahd, chief of radioisotope service at the center, said the counter will be used in diagnosis and medical research and will be an important resource for civil defense.

It is the second such installation in the Veterans Administration and brings to approximately a half-dozen the number of such radiation counting systems in the nation. Each of these is individually designed and constructed.

The counter at the Los Angeles center was designed by Dr. Blahd and Dr. Benedict Cassen, VA radioisotope consultant and clinical professor of biophysics at the University of California at Los Angeles, with assistance of Dr. Norman MacDonald of the department of biophysics and nuclear medicine, UCLA.

The VA's other total-body radiation counter is at the agency's hospital in Boston. The Boston hospital is now in the process of installing around its counter 175 tons of surplus steel armor plate, obtained from the Navy. The shielding is necessary to screen out radiation from outside sources, so that so far as possible only the radiation from the body of the person undergoing testing is counted.

The steel chamber for the Los Angeles counter is 6x6x4 feet in size and is made of five laminated 1-inch sheets of steel, plus a 1/16-inch lead lining. It is housed in a steel building, which is insulated and air conditioned.

In testing, the patient sits in the chamber. Mounted over him is an extremely sensitive detector which transmits the radiation measurement to an analyzer mounted outside the steel chamber. It is possible with this counter to measure the natural human radioactivity emanating from body potassium. Body potassium is composed of a mixture of three isotopes, one of which is normally-radioactive potassium-40.

Although the human body contains extremely small amounts of potassium-40, with the counter doctors can measure the radioactivity coming from this element and determine the total amount of potassium in the body of the patient tested. Knowledge of body potassium content is of importance in diagnosis of many diseases, particularly those conditions involving the nerves, muscles, and kidneys.

In addition to other uses, the counter will be of great value in medical research for study of radioactive tracer substances, Dr. Blahd said.

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